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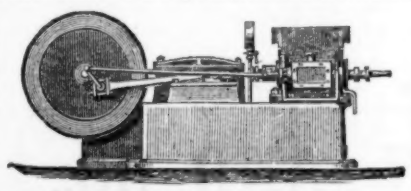

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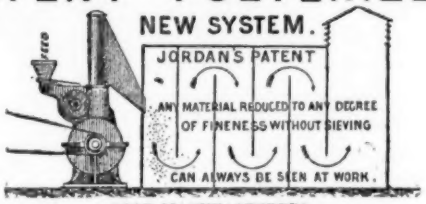

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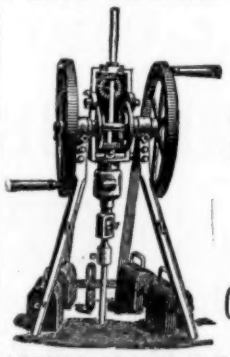

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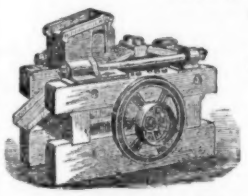

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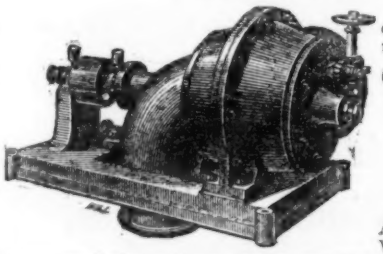

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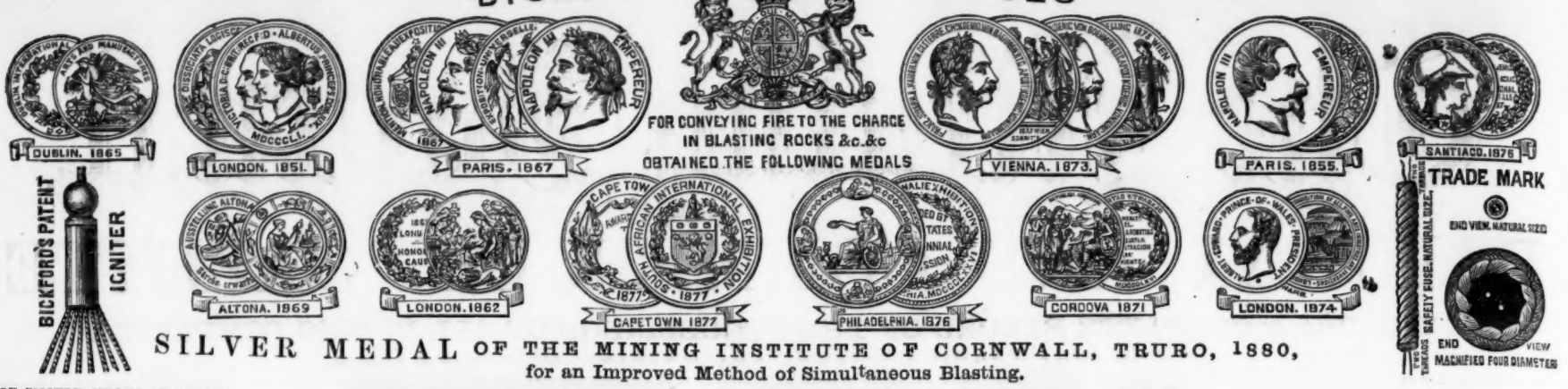

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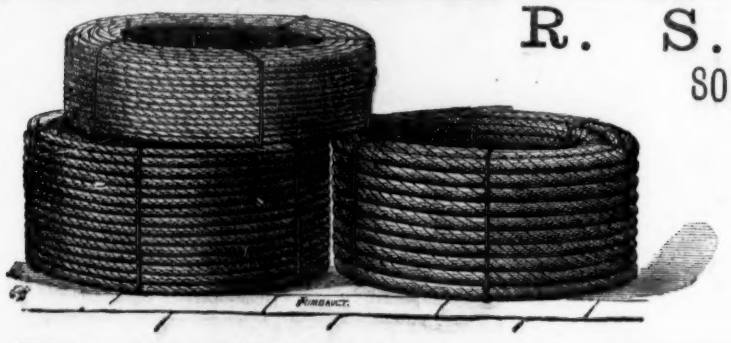

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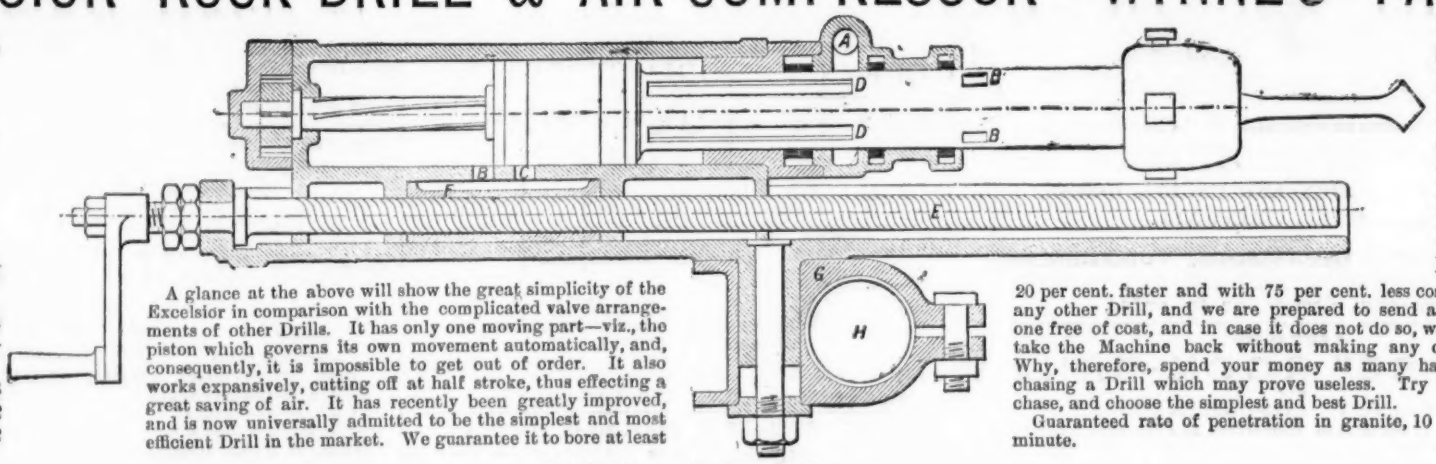

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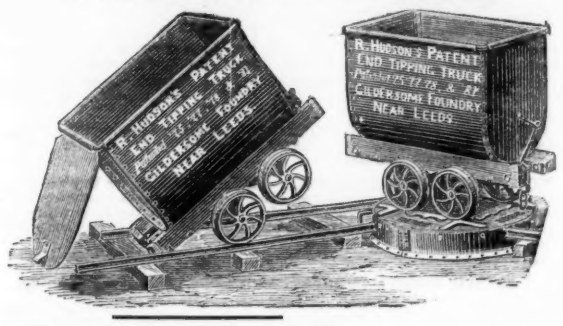
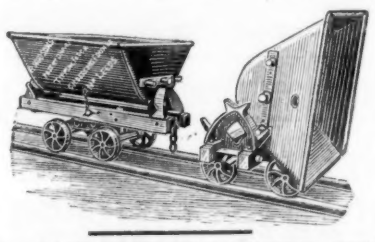
1.—PATENT STEEL END TIP WAGONS.

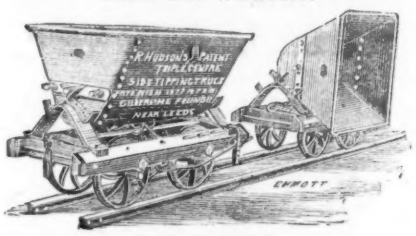


2. PATENT UNIVERSAL TRIPLE-CENTRE STEEL TIPPING TRUCK,
Will tip either SIDE or either END of rails.

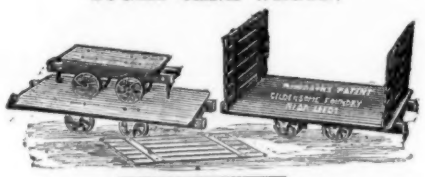


One man can EASILY tip ANY WEIGHT in these wagons.

3.—PATENT TRIPLE-CENTRE STEEL SIDE TIP WAGONS.



4.—PATENT STEEL PLATFORM OR SUGAR CANE WAGON.



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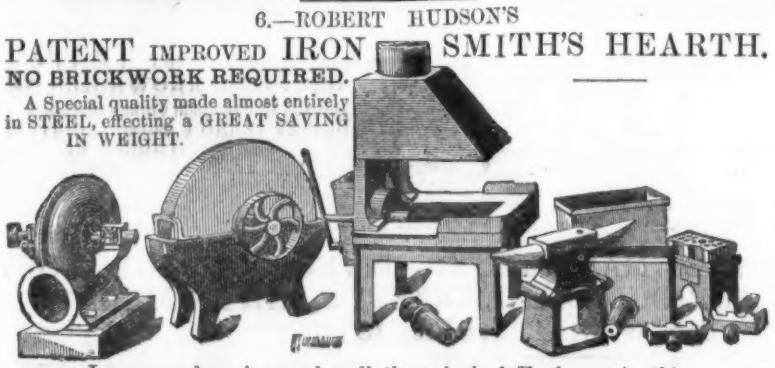
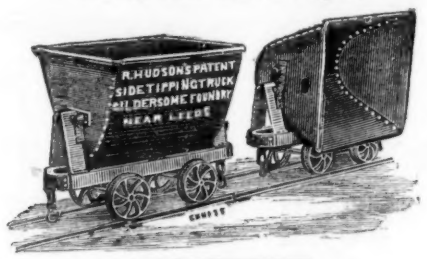
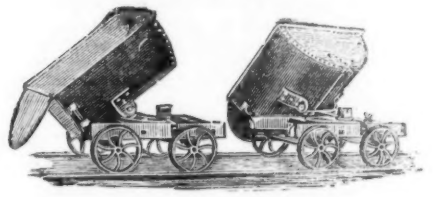


Large numbers in use by all the principal Engineers in this country and abroad.

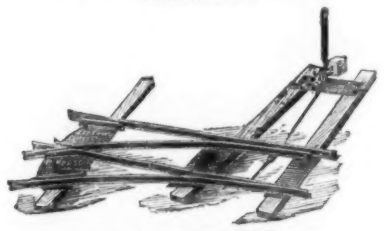
8.—PATENT DOUBLE-CENTRE STEEL SIDE TIP WAGONS,
Will tip either side of Wagons.



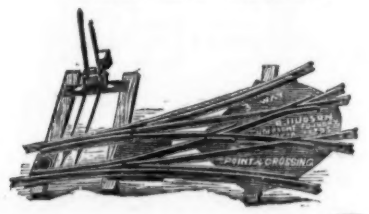
9.—PATENT STEEL ALL-ROUND TIP WAGON.



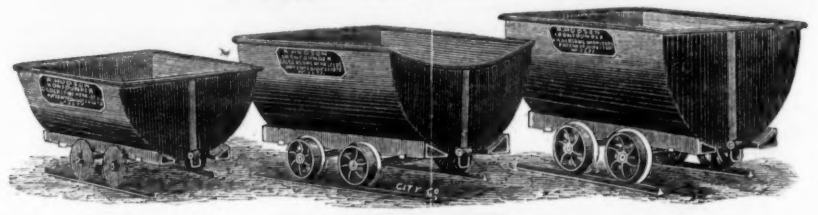
10.—LEFT-HAND STEEL POINT AND CROSSING.



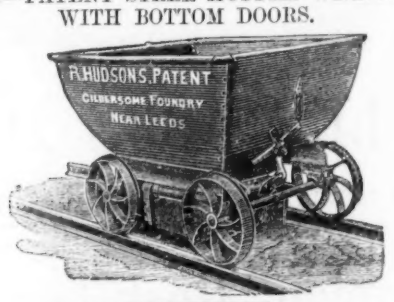
11.—RIGHT AND LEFT-HAND STEEL POINT AND CROSSING.



7.—PATENT STEEL MINING WAGONS.



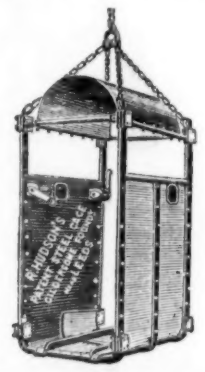
12.—PATENT STEEL HOPPER WAGON, WITH BOTTOM DOORS.



13.—PATENT STEEL HOPPER WAGON.

14.—SELF-RIGHTING STEEL TIP BUCKET.
(The "CATCH" can also be made SELF ACTING if desired.)

15.—STEEL CAGE.



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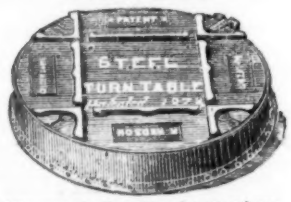

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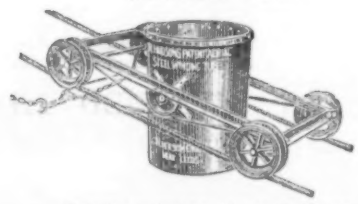
18.—"AERIAL" STEEL WINDING TUB.



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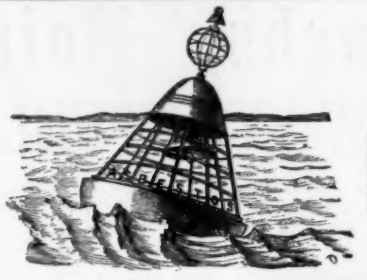
It is now a recognised fact that the most perfect heat-resisting material suitable for the purpose of a Packing is Asbestos, but to ensure a successful application of this fibre, great skill is required in its selection and manufacture. In this Packing the Asbestos is woven into a stout cloth, and owing to the peculiar way in which it is manipulated, great elasticity is imparted to the Packing. So successfully has this been done, that with light screwing, it has been found in practice that little or no lubricant is required to ensure a minimum amount of friction, and to keep the rods from over-heating. An improved vacuum is always maintained by the use of this packing, which meets with unqualified approval wherever it is applied.



This packing is made in four forms to meet various requirements, viz., as Fig. 1, square; 2, round with solid rubber core; 3, with tubular rubber core; 4, without core, but with rubber inlaid.

As these packings are extensively imitated, and as it is a common practice among dealers and agents to supply the cheaper manufactures at my list prices, users are requested to see that the packing supplied to them bears my trade mark.

BELL'S PURE ASBESTOS PLAITED YARN PACKING. This is the best and most economical Piston Packing in the market for High and Low Pressure Stationary Engines. Of course there are many imitations of a Packing so universally approved of, but I am the Original and Sole Manufacturer of the genuine article.

Every 10 ft. length of this Packing bears a label with my Trade Mark, and users are recommended to see that this label is attached, to secure their obtaining the material they have ordered.

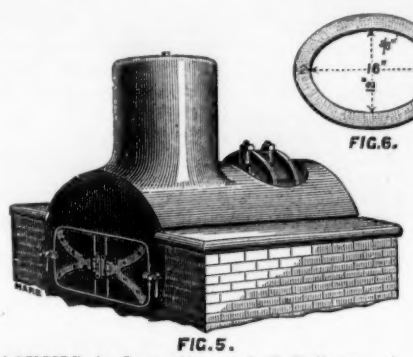


FIG. 5.

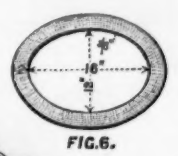


FIG. 6.

FIG. 1.

FIG. 2.

FIG. 4.

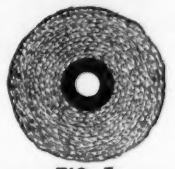


FIG. 3.

BELL'S ASBESTOS YARN and SOAPSTONE PACKING for Locomotives, and all Stationary Engines running at a very high speed with intense friction.

The following Testimonial refers to this packing;—

Festiniog Railway, Locomotive Superintendent's Office, Portmadoc,
January 13th, 1883.

Mr. John Bell, 118, Southwark-street, S.E.

DEAR SIR,—I have much pleasure in saying that the Asbestos Yarn and Soapstone Packing gives every satisfaction; indeed better than we expected. We have a locomotive packed with it, which has been running five months (and think of the piston speed with our small wheels). I think the Soapstone a great improvement, as it keeps the packing elastic, and prevents it getting hard. I am very pleased with its working, and also the very low price for such good lasting packing. The Asbestos Yarn we find is very useful, and answers admirably.

Yours truly, (Signed) W. WILLIAMS.

Every 10 ft. length of Bell's Asbestos Yarn and Soapstone Packing bears a special label with the Trade Mark, and engineers are earnestly requested to see that this label is attached, to prevent imposition by worthless imitations.

BELL'S ASBESTOS BOILER COVERING COMPOSITION (Fig. 5), for Coating the Pipes and Boilers of every kind of Marine and Stationary Engine. Non-combustible, and easily applied when steam is up; adheres to metals and preserves them from rust; prevents the unequal expansion and contraction of boilers exposed to weather; covers 50 per cent. more surface than any other coating, and is the most durable material of its class.

The composition is supplied dry, and is only to be mixed with water to the consistency required for use.

The following Testimonial refers to the Asbestos Boiler Covering Composition;—

The Maxim-Weston Electric Company (Limited), 29, Bankside, London, S.E.,
Jan. 4th, 1883.

Mr. John Bell, 118, Southwark Street, S.E.

DEAR SIR,—In answer to your request, I beg to inform you that I find the thermometer placed 3 ft. above the boilers now stands at 93°; before your covering was put on it used to stand at 126°. With regard to the saving of fuel, I am unable to speak very accurately, as the boilers were not working long enough before being covered to ascertain the amount of fuel that would be consumed in an ordinary run; but I feel quite justified in saying that we burn less by about 5 cwts. per night than we were doing, and I shall be glad at any time to show the boilers to anyone who may wish to see them, as I consider yours the best covering that I have up to the present seen.

Yours faithfully,
(Signed) J. H. CUNDALL, Works Manager.

BELL'S ASBESTOS and INDIA-RUBBER WOVEN TAPE and SHEETING, for making every class of Steam and Water Joints. It is the most efficient material for making bilge water pipe joints. It can be bent by hand to the form required without puckering, and is especially useful in making joints of manhole and mudhole doors; also for large "still" joints where boiling fat and steam have to be resisted. It is kept in stock in rolls of 100 ft., from ⅛ in. (Fig. 6) to 3 in. wide, and any thickness from 1/16 in. upwards. Manhole covers can be lifted many times before the renewal of the jointing material is necessary.

The same material is made up into sheets about 40 in. square, and each sheet bears my Trade Mark, without which none is genuine.

The engineer of a world-renowned firm writes:—"There is not, nor can there be, any doubt as to the excellence of your Asbestos and Indiarubber Woven Sheeting—as a jointing material it is unrivalled."

The engineer of a large colliery writes:—"I would in all candour say that your Asbestos and Indiarubber Woven Sheeting is first-rate for joints. In my 25 years' experience I have not seen anything like it. I highly recommend it to all those who have to do with steam engines."

It is very necessary to guard against imitations of this useful material, and to secure themselves against being supplied with these cheaper articles at my price, users are recommended to see that every 10 ft. length of the Asbestos Tape purchased by them bears my Trade Mark.

BELL'S SPECIAL LONDON-MADE ASBESTOS MILLBOARD, for Dry Steam Joints, made of the best Asbestos fibre, is well-known for its toughness and purity, and is absolutely free from the injurious ingredients frequently used to attain an appearance of finish, regardless of the real utility of the material. Made in sheets measuring about 40 in. square, from 1-64th in. to 1 in., and ½ millimetre to 25 millimetres thick. Each sheet bears my Trade Mark.

To avoid spurious imitations, and to secure the receipt of genuine goods, all orders should be sent direct to the undermentioned addresses, and not through Agents or Factors.

ILLUSTRATED PRICED CATALOGUE FREE ON APPLICATION TO

BELL'S ASBESTOS WORKS, SOUTHWARK, LONDON, S.E.

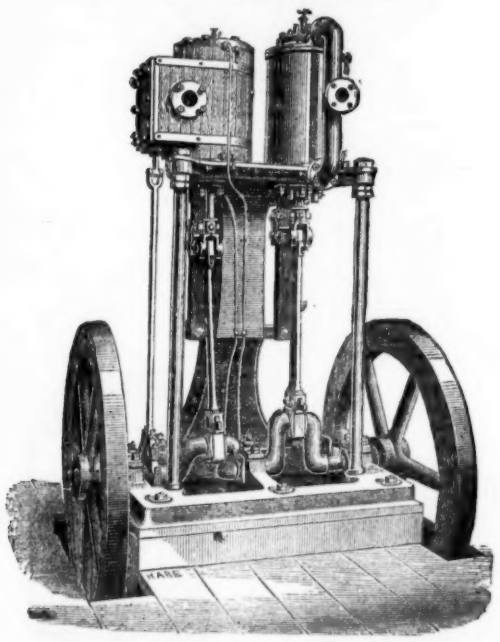
OR THE BRANCH WAREHOUSES—

VICTORIA BUILDINGS, DEANSGATE, MANCHESTER. 11 AND 13, ST. VINCENT PLACE, GLASGOW. 21, RITTER STRASSE, BERLIN.

THE

"Champion" Rock-borer

AND AIR COMPRESSOR.



As an instance of the actual work done by this Machinery in various kinds of ground, some of it the hardest rock, it may be mentioned that in Cornwall, irrespective of the work performed by the "Champion" Rock-borers and Air-compressors purchased by various Mines, the drivage, rising, sinking, and stoping done by contract by the Proprietor with his own Machinery now amounts to over 1150 fathoms.

Several of these Air-compressors, ranging from 3½ to 12 tons in weight may be seen in constant work in the Camborne Mining District.

R. H. HARRIS,
ENGINEER,
63, QUEEN VICTORIA STREET, LONDON.

FROISETH'S NEW AND REVISED MAP FOR 1875,—Size 40 by 56 inches, scale 8 miles to the inch. Handsomely engraved, coloured in counties, showing the Towns, Settlements, Rivers, Lakes, Railroads, Mining Districts, &c., throughout the Territory, and all the Government Surveys to date. Mounted on cloth, £2; half-mounted, £1 12s.; pocket form, £1.

Also, GENERAL MINING MAP OF UTAH, showing twenty-eight of the principal Mining Districts adjacent to Salt Lake City, and location of the most prominent mines. Price, pocket form, 5s.

Also, NEW MAP OF LITTLE AND BIG COTTONWOOD MINING DISTRICTS showing the location of over Four Hundred Mines and Tunnel Sites, together with the Mines Surveyed for United States Patent. Price, sheets, 6s.; pocket form, 8s.

For sale, and supplied by—
TRUBNER and Co., 57 and 59 Ludgate Hill, London.
B. A. M. FROISETH, Salt Lake City, Utah, U.S.

MONEY LENT, at EIGHT, NINE, and TEN PER CENT., on FIRST MORTGAGE of FREEHOLDS for IMPROVEMENTS and STOCKING, said freeholds in the Province of MANITOBA.
Address, HERBERT C. JONES, Solicitor, 20, Masonic Hall, Toronto.

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ESTABLISHED 1852.

SYBRY, SEARLS, AND CO.,

MANUFACTURERS OF THE

CELEBRATED MINING STEEL, BRANDED SSS

Cast Steel, Shear, Blister, Spring, Hammer, and Pick Steel.

Special Rock Drill Steel.

Mining Tools, Files, Saws, Hammers, and Picks.

CANNON STEEL WORKS, SHEFFIELD.

The Only Knapping Motion Stone Breaker and Ore Crusher.

AWARDED THE ONLY SILVER MEDAL FOR MECHANICAL EXHIBITS AT THE ROYAL CORNWALL POLYTECHNIC SOCIETY, FALMOUTH, SEPT., 1881.

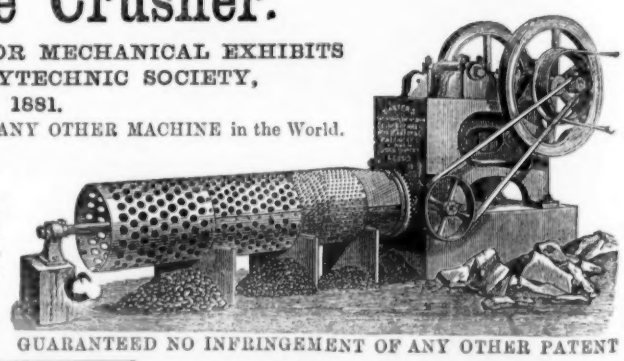
UARANTEED to do MORE WORK with less power THAN ANY OTHER MACHINE in the World.
NOTE THIS FACT.

To Mr. Baxter, Leeds. *Cinderford, Feb.* 13, 1883.

DEAR SIR,—I am pleased to be able to tell you that the Machine works splendidly. We are breaking 16 trucks a day now, and we thought it a good day's work to do 10 a day with the old Machine, so you can see the difference. I had a gentleman looking at it yesterday, and he was surprised to see it work so easily.

Yours truly, E. ORGAN.

The above refers to one of our 16 by 9 Machines we supplied to replace an "Improved Blake" 15 by 9 Machine.



GUARANTEED NO INFRINGEMENT OF ANY OTHER PATENT

AWARDED THE ROYAL MANCHESTER, LIVERPOOL, AND NORTH LANCASHIRE AGRICULTURAL SOCIETY'S SILVER MEDAL, 8TH OF SEPTEMBER, 1882.

FOR ILLUSTRATED CATALOGUE AND FULL PARTICULARS ADDRESS TO THE PATENTEES AND SOLE MAKERS,

W. H. BAXTER & CO., ALBION STREET, LEEDS.

Original Correspondence.

DENVER AND RIO GRANDE RAILWAY OF COLORADO—ITS PAST, PRESENT, AND FUTURE.

SIR,—It would be difficult for a traveller in search of the beautiful and romantic in Nature to find a more charming country than that portion of Colorado through which passes the Denver and Rio Grande Railway—the scenic line of America. Ten years ago this little narrow gauge extended only to Pueblo, a distance of 115 miles from Denver, the state capital; but at present writing it embraces over 1600 miles of road, piercing the very heart of the American continent, penetrating the wild gorges and canyons of the Rocky Mountains, scaling the snow-capped peaks of the continental divide, and reaching every mining camp and town of importance in Colorado, as well as the adjoining territory of Utah.

For a distance of 75 miles from Denver, one of the most charming cities on the American continent, the railway passes through a very pleasing stretch of country along the base of the Rocky Mountains, until we reach Colorado Springs, a well arranged, well laid out city of 6000 people. When this place was founded by a company of Englishmen 10 years ago it was intended to make it a health resort for the summer, but invalids, and especially consumptives, finding the dry atmosphere of winter so favourable to their restoration, remain in the springs the whole year round, and ultimately become so interested in the place as to make it their permanent residence. Six miles westward is Maniton, the Saratoga of the West as its people delight in calling it. The little village nestling at the foot of Pike's Peak, and consisting mostly of mammoth hotels, is the summer resort *par excellence* of Colorado. Thousands of people go there for the summer from all parts of the country, and when they leave they take with them a glow of health upon their cheeks that speaks strongly in favour of its health-giving atmosphere and curative waters. The soda springs of Maniton bubbling from the earth continuously will restore the bilious patient more thoroughly than the best liver pill ever compounded, and the tonic nature of the iron springs will help the most sensitive stomach to enjoy in a hearty manner almost any kind of food. In and around Maniton Nature has seemed to excel itself in producing a great variety of wonderful scenery. The Garden of the Gods contains a number of gigantic rocks of red and gray sandstone, some of them standing 300 or 400 ft. high, covering acres of ground, and the red or gray colour of the rock contrasting pleasantly with the green grass and buff tints of the sandy soil upon which they stand. Monument Park offers another surprise with its singular freaks of Nature, rocks standing in the open plain, some of them 100 ft. high, representing every conceivable object; one of them a gigantic anvil, and another a corps of priests at the altar. One peculiarly shaped rock is called the Ute's medicinal monument, because those Indians years ago worshipped this rock. The medicine man would go through various peculiar motions, and if the patient recovered the Indians in their superstition would ascribe it all to the wonderful medicinal powers of this particular monument. To the geologist these wonderful freaks of Nature are specially interesting. They are nothing more nor less than peculiar specimens of eroded red and gray sandstone, brought to their present singular forms by aqueous and atmospheric causes, taking millions of years possibly to arrive at their present unique shape. To understand this better, let me say that the superstructure or top of the rock for a few feet is of a harder substance than the base, and the action of the dry atmosphere therefore wears the latter away more rapidly, leaving the top to form a cover very much resembling a college cap. Maniton is a point from which many delightful excursions may be taken. Cheyenne Canyon is within a few miles, just far enough to give one a pleasant horse-back ride, and the scenery well repays the trouble and expense involved in reaching it. Ute Pass with its rainbow falls is within a mile of Maniton, and nearer still is Williams' Canyon, another peculiar freak of Nature, with its still more wonderful cave. Pike's Peak, the monarch of Southern Colorado, can be readily seen from the piazza of the hotel, and seems as if the distance could be made in a few hours, but the trail is 16 miles long, and the height attained in reaching the summit 9000 ft. higher, but it is well worth the trouble involved, for the scene is indescribably grand.

A ride of some 50 miles further brings us to the prosperous and growing city of Pueblo, with its silver and lead smelting establishments and immense steelworks, which at present furnishes all the steel rails for the Denver and Rio Grande Railway, and the western extensions of the Burlington and Missouri and Santa Fé roads. It is at this point that the Denver and Rio Grande Railway diverges, the one branch going directly west to the great mining camps of Leadville, Red Cliff, Kokomo, Gunnison, and on to Salt Lake, the other taking a south-westerly course to Durango and Silverton, the heart of the famous gold and silver districts of the San Juan. The wonderful feats of engineering displayed upon this narrow gauge road are well deserving mention. No barrier or chain of mountains deters the whistling locomotive, from scaling their heights and again descending into the valleys beyond. We approach Dump Mountain near its base, and as we behold its summit several hundred feet above, we see the point which we shall shortly reach, and after passing the mule-shoe curve, which is so abrupt and sharp that the smallest English railway carriage could not pass it, we ascend a heavy grade, and on reaching the summit look back at the valley below and there admire the splendid achievements of railroad engineering. Further on, several miles beyond Antonito, we ascend the San Juan range of mountains, passing through Toltec tunnel -so named in recognition of the now extinct race which centuries ago inhabited the hills and valleys of Southern Colorado—and from that point for over 200 miles this enterprising road pushes its arms westward, flitting from peak to peak, leaving the gorges far below until Durango is reached, thence to Silverton up the Canyon of the Animas, the whole presenting one of the finest specimens of railroad engineering, and the grandest scenery in the world. Silverton is at present the terminus of this southern branch, and from this point the product of the surrounding mining camps, amounting to several hundred tons a day, is shipped to the smelters of Denver and Pueblo. A ride of seven hours from the latter place brings us to Leadville, the most prosperous mining camp in the world, which during the past six years has produced gold, silver, and lead, amounting to $80,000,000. On the way thither we passed through the famous Grand Canyon of the Arkansas and Royal George, the railway for a considerable distance being built upon the bed of the river, the rocks on either side being so close to one another as to only admit of the river and railroad track rising abruptly above us for a distance of 2000 ft., and presenting a scene that is grand in the extreme. On our way to Salt Lake we crossed the continental divide at Marshall Pass, attaining a height of 11,000 ft. above sea level, and descending on the other side of the range, making a detour of some 30 miles, while the distance in a direct line cannot exceed 10. The difficulties encountered in building this branch of the road, and the ultimate success, are further monuments to the triumphs of engineering skill and the indomitable pluck of its projectors, but these have already become matters of history. In a couple of hours we reach Gunnison City, where a branch road has been built to the rich coal fields of crested Butte and the silver regions of Irwin and Gothic. About 20 miles beyond Gunnison, following the river bearing that name, we enter the famous Black Canyon, which differs from the Grand Canyon in this respect, that while the rocks are not so precipitous, they nevertheless reach a height greater in some places, and the wildness of the scene is occasionally relieved by a clump of pine trees which have forced their way through a rift in the rock. An admiring observer of this unrivalled scene says:—"Fantastic castles, cathedrals, spires, and needles thousands of feet in height rise straight up, and strain the eye to follow their soaring heights, and vines, bushes, and sturdy little trees cover the rocks with their traceries, and take from the deep gorge the grim and terrible majesty of the solid everlasting granite, and a rushing mountain torrent of the clearest emerald green waters sweeps between the walls, or mirrors their summits in some stilled expanse. A dancing waterfall that drops from the infinite azure above falls splashing into this river, taking one joyous plunge down the straight wall, and trickling off on either side in dozens of tiny rills."

From Cimmarron, near the western entrance to the Black Canyon to Grand Junction, and thence beyond to the Wahsatch Mountains and farming districts of Utah, the scenery is not particularly diversified, but through the Utah Valley to Salt Lake City, and on to Ogden where the Denver and Rio Grande connects with the Central Pacific for California, the road passes through a country which has been converted into a perfect garden by the industry of the Mormon inhabitants. Some time ago I had occasion to speak of this road, and in the columns of the *Mining Journal* predicted that a great deal of the passenger and freight business to California would hereafter be done by this road. That my predictions have been fully verified the heavy train loads of passengers is the best evidence, and all travellers express themselves as fully satisfied with the excellent accommodations furnished, and the courteous manner in which they have been treated by officers and agents from one end of the line to the other. The business of the road still continues very good, and up to the present time the earnings exceed those of last year for a similar period by nearly $1,000,000. The new president, Mr. Lovejoy, has recently made a trip over the road, and expresses himself fully satisfied with the substantial manner in which the line has been constructed, is in hearty sympathy with the present management under the direction of Colonel Dodge, is quite pleased with the business already done, and the splendid out-look of the future. During the coming year several branches to the rich mining camps of Ouray, Red Mountain, Lake City, and other points in the San Juan will be constructed, the result of which will be of great benefit to the miners and railroad alike, and therefore in view of its prosperous future I should strongly advise English stockholders in the Denver and Rio Grande Railway to hold on to their shares, and not dispose of them at the present prices, which I firmly believe are far below their real value. English travellers going to California or beyond should by all means avail themselves of this picturesque route, and to those who have never been in this country before, if they wish to take a pleasant and direct route from New York, I should recommend the Pennsylvania road to Chicago, thence by the Burlington direct to Denver, or by the same line to Kansas City, from there by the Santa Fé and Rio Grande to Denver, Salt Lake, and the Pacific Coast.

J. FITZ BRIND.

Denver, Colorado, Nov. 11.

FLAGSTAFF DISTRICT MINING COMPANY.

SIR,—I was pleased to see in the *Mining Journal* of three weeks since an announcement from the secretary of this company of a parcel of some 50 tons of rich silver ore being sold at the Flagstaff District Mine. I would now suggest that the directors should send their weekly reports from Utah to your columns for the information of the 500 or 600 shareholders on the register. This is done in the case of the New Emma Company, and I hope to see Flagstaff District doing the same. Allow me to add that private letters from Utah speak of the splendid prospects in the Flagstaff Mine, and a bonanza of rich ore may be struck there any day, as the manager is now in ledge matter.—*Barnstaple, Nov.* 28.

A SHAREHOLDER.

MINERAL RESOURCES OF UTAH—THE COTTONWOODS.

SIR,—These districts commence about 14 miles south-east of Salt Lake City, and are situated in one of the highest portions of the Wasatch Mountain Range, 9000 to 12,000 ft. above the level of the sea. Little Cottonwood is a deep gorge, 15 miles long. Big Cottonwood Canyon splits itself into several forks, and is in the aggregate, with its different forks, over 40 miles long. The lower parts of the Cottonwoods cut through a large grand mass of granite, extending northerly and southerly, and rising in solemn awe-inspiring grandeur, with their grey snow-capped heads more than 12,000 ft. above the level of the ocean. This granite rises out of and above a mass of schist and crystalline rocks.

Proceeding easterly up the canyon we begin to turn the pages upon which Nature has been writing the geological history of her grand and mysterious works for thousands of ages; we observe a mass of coarse-grained, in places porphyritic rock, containing quartz veins, with galena, copper, silver, and antimony, overlying the granite; we observe a mass of schist, 1200 ft. in thickness, dipping from east north-east gradually by Emma Hill north. Above the schist we observe about 300 ft. of crystalline lime; then 250 ft. of metamorphic sandstone, commonly known as quartzite; then a layer of schist, varying in thickness, from 20 to 40 ft., and crowning all is a mass of silurian limestone, consisting of dolomite or magnesian limestone and calcite, or carbonate of lime, nearly 2000 ft. in thickness. In this lime belt appear the treasure chambers of the Cottonwoods, known as the Carbonate, Vina, Reed and Benson, Ophir, Ohio, Jupiter, Eclipse, Emilie, Rough and Ready, Nabob, Flagstaff, South Star and Titus, Vallejo, Toledo, Joab Lawrence, North Star, Howes, Equitable, Savage, Montezuma, Mackay, Revolution, Emma, Caledonia, Swansey, No. 1, No. 2, No. 3, Cincinnati, City Rock, Davenport, Richmond, Theresa, Prince of Wales, Wellington, Antelope, Evergreen, Darlington, Grizzly, Vanderbilt, Morill, General Monk and May, Utah, Minet Light, Harkness, Butte, Oregon, Albion, Moltke, Bismark, Albion, and many others too numerous to mention.

PATSEY MARLEY OR VIRGINIA MOUNTAIN.—Advancing further eastward we study page for page in the book of Nature in its chapter on the Cottonwoods, and observe Patsey Marley Hill, a second mass of granite, adding to the surrounding grandeur, rising out of the schists, which said schists are highly impregnated with copper. I say second mass of granite, because it is distinct from the first mentioned mass of granite in points of age and upheaval. This second mass of granite has split the upper part of the canyon into a north and south fork. The presence of gneiss as boulders, the spurs of schist breaking through this granite, and the mass of granite itself being syenitic in structure and coarse grained, indicate a more recent origin than that of the granite in the lower and western portion of Big and Little Cottonwood Canyon. On the north-west ends of the mountain the efforts of the second upheaval and disturbances are clearly illustrated by a mass of common schist and crystalline lime, appearing at least 2000 ft. above the place whence the mass was torn. This second upheaval extends across the Canyon, and is observable on the side of Emma Hill tunnel. Thus, we have two upheavals, the first from the west, throwing east; the second rises through the mass of rock so thrown, and exerts a merely local influence by faulting said mass to a slight extent.

EMMA HILL.—Passing along the wagon road from Alta to the Emma Mine we observe another mass of granite—a fact which, taken together with the other masses of granite, should demonstrate beyond dispute that the granite underlies the whole of Big and Little Cottonwood, as it does the whole of American Fork, Silver Lake Snake Creek, and Uintah mining districts. The formations belong to the palæozic age, but for all that the specimens found in the fœtid lime of the Cottonwoods in reality belong to the æzoic; still the metamorphic action to which the rock has undeniably been subjected verifies the conclusion of a palæozoic origin.

DAVENPORT HILL AND GRIZZLY FLAT.—On the Davenport hillside the second upheaval has raised a series of rocks which contain no quartzite, but schist and copper schist overlying the same—a fact which demonstrates the destruction of the missing strata by the action of the upheal. This part of Davenport Hill is very extensively traversed by several dykes of a hard compact trap, hardly distinguishable from the surrounding lime. Two of these dykes pass within the vicinity of the Victoria tunnel mouth. The other dyke runs north, passes the Imperial, and crosses the Divide by the Davenport Mine. Another dyke runs across Grizzly Flat over the Divide far into Big Cottonwood district; this dyke is plainly visible, and illustrated in the City Rock, Butte, Oregon, and Big Cottonwood Evergreen Mines. A fault in the northern part or end of Emerald Hill forms a synclinal curve in the ridge to within a short distance of the Wellington Mine (Little Cottonwood), passing thence over to American Fork across the Cariboo Company's mines on Mineral Flat, thence across the Utah Consolidated and Miller Company's mines on Miller Hill and further down American Fork, past Forrest City towards Deer Creek. Another fault on the southern flank of Patsey Marley corresponds with the northern fault which caused the absence of sandstone and schist. The missing rock is visible to within a short distance of the track itself—a fact which verifies the foregoing conclusions.

It is undeniably beyond dispute that the varying character of the Cottonwood ores was caused through, and by the influence of, the different country rocks. Emma Hill and Peruvian Hill shows carbonates of lead and galena in dolomite or magnesian limestone, and on the contact between dolomite and calcite soft oxides with galena in the fœtid limestone. In the granite we observe sulphate of silver, galena, iron pyrites, oxides, and carbonate of copper, such as we find on Davenport Hill, Grizzly Flat, and Patsey Marley Hill. In the upper bed on Emma Hill the ore deposits appear as parallel ore chimneys on the east or west line. In the lower or Emma ore belt the deposits appear as segregations or pseudo-morphic displacements on an extensive scale. Nature, in her curious and mysterious work, has caused here the different fissures so to run and join each other as to form to all appearance a very well-defined strata vein, with numerous branches, feeders, and spurs, crossing the formation in all directions; but in reality it is not a strata vein, but an ore deposit, as described above. By close observation it will be seen that the ore does not occupy a real vein fissure, but that the mineral solutions circulating and ascending from below have entered into all and every open space of the extensively fissured rock, rooted in the same, impregnated the same, dissolved the carbonates of lime and magnesia, and deposited in its place the mineral wealth as we find the same at present in Nature's grand treasure vaults of the renowned Cottonwoods and adjoining districts.

An illustration of this action is observable in the Flagstaff, South Star, Joab Lawrence, North Star, Equitable Tunnel, Cincinnati, Emma, and Caledonia Mines. Here the wall rock is decomposed in the line of fracture, apparently washed out by water, and rough projecting boulders show the action of mineral re-agents upon the same. So every small seam of vein-matter or gangue should be followed up, as the same must and will lead invariably to larger deposits of ore, and with a possibility of striking bonanzas.

An examination of the ore beds shows that they were formed subsequently to the great upheaval by ascension from below. Descending we observe the action of the igneous rocks more frequent, trap dykes identical with those of American Fork and Silver Lake districts traversing the lower beds; in association with these dykes of igneous rock are observable large deposits of argentiferous and ferruginous ores. Some of these dykes seem to be of a granitic origin changing gradually to a porphyritic character, and then disappear, after having run a certain distance in the lime and quartzite. All the ore deposits are of a more recent origin than the dykes, but all are more or less in connection with the same. Sometimes the porphyry has been removed by pseudo-morphic action, and has been replaced with ore, giving the appearance as if the formation of the ore deposits were the secondary effect of the igneous eruptions.

The strike of these ore deposits in most cases is in conformity with the general course of the dykes. I speak here of the main deposits. The Emma, Davenport, Wellington, Reed and Benson, City Rock, Butte, Oregon, Evergreen, and other mines are connected with such dykes, and it is very suggestive to suppose the dyke instrumental in the formation of the ore deposits—the more so, that these deposits contain, not only traces, but, in some places, considerable of the dyke material.

Passing to the north of the Flagstaff-Emma ore deposit is a deeply-marked fault, which identical fault has been traced in the Emma main shaft, the Illinois tunnel, where a level was run by the North Star to a length of over 300 ft., and a shaft sunk 90 ft. below the tunnel exposes the fault to a considerable extent. The grooving of the walls of said fault show a throw from above down the hanging-wall of the fault, so that the dislocated part of the ore deposit must be looked for below, on the hanging-wall of said fault. The throw of this fault is furthermore indicated by a so-called dirty trail, plainly visible in several mines working on the Flagstaff-Emma ore deposit. The fault has crushed a great quantity of limestone in the lower part of the ore chamber, which part is filled therewith, and in time this crushed mass has become so compact that it appears, at first sight, to be a veritable limestone floor, as it is plainly visible to a depth of 25 ft. in the Flagstaff, 40 ft. in the South Star and Joab Lawrence, 90 ft. in the North Star, and also in the Emma Mines.

This compact nature has been acquired by heat, generated by the friction of the fault surface. This fault can be traced from the Flagstaff on the west, through the South Star and Titus, Joab Lawrence, North Star, and Emma. The same effect of this disturbance is also visible in the Magnet, Caledonia, and other mines. The continuance of the ore deposit below this fault is demonstrated beyond doubt in the Eclipse, Flagstaff, South Star, Joab Lawrence, and through G. Cullins, one of Utah's best mining superintendents in the celebrated Emma Mine. The hanging-wall of the great Flagstaff-Emma ore deposit is dolomite and the footwall is calcite, both of the Devonian age.

Both the Cottonwoods show unmistakable evidence that they were at remote past ages filled to their very mouth by glaciers. These glaciers can be easily traced by the marks they left all over the districts. It is undisputably a fact that the system of glaciers was coincident with the ancient lake named by United States geologists Lake Bonneville, of which said lake are left as remnants and visible monuments Great Salt Lake, Utah Lake, and Lake Sevier. The shore marks and lacustrine deposits of said Bonneville Lake occupy the whole of the valley, and just touch the foothills of the great mountain ranges. The moraines and other marks and traces of glacial action are mostly confined to the higher situated gorges and ravines of the Wasatch, Oquirrh Onoqui, or Skull Valley, Cedar and Snake Mountain ranges; but at the mouth of the Cottonwoods we have evidence from observation that the moraines extended into the great ancient lake.

THE PRINCIPAL MINES.—The leading mines of Little Cottonwood district are:—Emma, City Rock, Flagstaff, Joab Lawrence, North Star, South Star and Titus, Nabob, Virginia, Grizzly, Utah, Lavinia, Wellington, Albion, Moltke, Defiance, Emerald, Savage, Montezuma, Highland Chief, Mackay, Revolution, Davenport, Kanosha, Emilie, Rough and Ready, Caledonia, Swansea, Howes, Leonard, Vacca, Cincinnati, No. 1, No. 2, No. 3, Bolles and Collins, Equitable, Darlington, Vanderbilt, Morill and Sawles, General May, General Monk, General Welles, Pocahontas, Evergreen, Hunter, Lady Morehead, Matilda, Bismark, Enterprise, Excelsior, Imperial, Alice, King of the West, Daisy, Tartar, Jacob, Astar, Flora Temple, Stoker, Frederic, Crown Prince, Wabansa, Langdon, Live Yankee, Oxford, Geneva, West Point, Brilliant Star, Dexter, Baldy Fritz, Siskiyou, Superior, Marietta, West Wind, Upton, Oriental, Cunningham, Leontine, Josephine, Flora, Louisa, Fritz, Sedan, Cedar, Murphy, Cigaritta, Zacatecas, Sells, Alta, Voltaire, Ravine, Alpha, Winamuck, Freeland, Queen Dowager, Lexington, Boston, Manitoba, Peosta, and many others. The leading tunnels for the development of the said above mines are Bay City, Equitable, Buffalo, Oakland, Howland, Lady Esten, Phœnix, and Great Salt Lake Tunnel.

BIG COTTONWOOD is a continuation of Little Cottonwood formation northwards, it is in every principle a counterpart of the other, with the exception that its resources are much greater and its scenery much grander and beautiful. The principal mines in this district are:—Prince of Wales, Wellington Carbonate, Highland Chief, Richmond, Theresa, Reed and Benson, Ophir, Ohio, Eclipse, Belshazzar, Sailor Jack, Sacramento, Butte, Oregon, Dolly Varden, Buckeye, jun., Evergreen, Geneva, Osceola, Maxfield, Irma, Vina, Neptune, Hayes, Silver Mountain, Jupiter, Horn of Plenty, Ulster, Sunny Side, Silver Star, Congress, Homeward Bound, Cooper, Genesee, Little Fred, Queen Bess, Stella, Connaught, Little Cora, Backer, Bright Paint, Umpire, Ogden, Scott, Abbey, Black Bess, Christopher Columbus, Taylor, Dolphin, Mammoth, New York, Oskaloosa, Rolston, Carbonate, Lone Pine, Little Giant, Home Ticket, Provo, Relief, Bearson, Balance, Seventy-Six, Fourth of July, Olive Branch, Fair View, Amanda, Mathilda, Great Western, Granite, Robison, Monster, Washington, Red Pine, Vinnie, Tyler, Thunderer, Nellie, Carrie, Legget, Snow Flake, Yellow Jacket, Milt Orr, Minet Light Harkness, Augusta, Pickwick, Walter, Elgin, Financier, Poland, Exchequer, Chester, Summit, Manhattan, and many others more.

Most of the above said mines in the Cottonwoods are extensively developed, and have produced and are producing thousands and thou-

sands of tons of good ore from $20 to $300 value per ton. Many of them have been dividend-paying mines from the day of their location; others need the helping hand of the capitalist, in order to enable the mines to pour out their treasures to the investor, and so become dividend-paying.

William Bredemeyer, M.E. and C.E., U.S. Surveyor.

STEEL RAILS FOR AUSTRALIA.

Sir,—From Australian papers I have to hand I note some information on the above subject, which, perhaps, our capitalists and iron manufacturers may not have seen or heard of, but which, nevertheless, may be interesting. The Government of New South Wales have issued a minute to the effect that they are prepared to receive tenders for 150,000 tons of steel rails to be made in the colony, the tenders to be called for under two conditions:—1. For rails to be manufactured from native ores. 2. For rails to be made from imported materials. Tenders to be received within six months and delivery to commence on Jan. 1, 1886.

Having only lately returned from New South Wales myself, after a residence there of nearly five years, opening out a coal mine, I am able to give some information of what resources the country contains for carrying out such a contract. Along the Great Southern Railway of the colony, near Mittagong and Mossvale, may be found every requisite for steelmaking—coal of undoubted quality, iron ore in abundance, mostly brown hematite, a sample of which I have with me, and within a distance of 12 miles extensive outcrops of mountain limestone. In fact, after visiting all of the different coal districts of the colony, I do not know of any where other necessaries are so closely allied with the coal for iron and steel making as this. I shall be happy to give any information with a view to facilitate competition for this contract, with a view to open up the metallurgical industry of Australia. Mining Engineer.

Chester-le-Street, Nov. 27.

MEANS OF INCREASING THE SUPPLY OF GOLD.

Sir,—In a recent letter on the above subject, in which I gave some particulars of the doings of my patent wave-plate amalgamator, I said that when the trials had proceeded further I would inform the public through the pages of your valuable Journal. I previously stated that it had saved gold when placed to take the tailings from three amalgamating copper plates; that when these plates were renewed my machine saved 6½ ozs. of amalgam against 4 ozs. on three plates from the next battery of stamps, both batteries being fed with the same ore, and, further, that when the tailings caught in a buddle from my machine were tested no gold could ever be found, whilst in the buddle that took the tailings over the three copper plates considerable quantities of coarse gold was found on every trial, which gold would not amalgamate with quicksilver in a pan unless rubbed and brightened. A few days since I saw the manager at the Conrad Hill Mines, Mr. M'Kee, also the assayer, Mr. Ninnis. In reply to my question as to the working of my amalgamator, the former said—"Oh! we never take any notice of it, and it works on just as it did when you started it. We only oil it and clean it out when the ore is through." Mr. Ninnis said, "We have ceased to assay the tailings, for as we could never find a trace of gold in them it was labour in vain. It must not be thought that Mr. M'Kee's answer was meant to convey any indifference to what the machine was doing; but that it worked so perfectly that it really never required any attention but for the two purposes named—oiling and cleaning out. Mr. Ninnis's answer gives the most satisfactory reasons for ceasing to assay the tailings.

I will, with your permission, proceed to give the reason for such splendid results from such a simple machine. From my first trials to amalgate gold with quicksilver, with a view to save the former after it was crushed with the ore that contained it, I conceived the idea that if the four ingredients—gold, quicksilver, crushed ore, and water were allowed free play in an amalgamator far better results could be obtained than if force in any form of rubbing or grinding was employed for such action was sure to be the cause of the quicksilver flouring, and so being lost. It was desirable to introduce the gold into the body of quicksilver, and the only plan to attain this seemed to be by a wave of one unbroken surface of quicksilver, so thin that the three other ingredients—gold, crushed ore, and water—should go completely through this wave of quicksilver, which would engulf and amalgamate with the gold, and the water would be free to wash the tailings away.

It was urged that the fine float gold would be washed away in the momentary interval between the movements of the machine, when the quicksilver is under the surface of the water previous to forming the next wave. I remembered crossing the waters of Niagara in 1850 just below the Horse Shoe fall, and I found the tendency of the boat was always to drift towards the awful deluge of water coming over the fall. As the water brings the crushed ore in a very mimic representation of a fall, I tried a chip of wood in the front of the wave-plate before I put any quicksilver into the machine, and the result was that it never could be washed away, but was engulfed again and again by the action of the wave of water. This confirmed my idea that the finest float gold would in like manner have a tendency to go towards the wave of quicksilver for amalgamation, rather than towards the delivery end of the machine and be lost.

On stating these facts on my arrival in this country in March last, I was met with the oft-repeated saying—but you have never treated the ores of this country the gold of which is coated with a sulphate of iron or copper that prevents its amalgamation with quicksilver, and untill that is rubbed off no amalgamation has ever been able to be made. I found also that the general conviction was that it was not possible to save more than one-half the riches the stone was supposed to contain.

By the courtesy of Mr. H. C. Burchard, the director of the Mint at Washington, D.C., I have been supplied with The Productions of Gold and Silver in the United States for 1882. I find in it that many high authorities express their belief that not more than half the gold in California and other Western States has ever been saved, and many examples of the truth of this are given; and writing of the gold ores of North Carolina he states, on page 747—When the water-line was reached these brown ores disappeared, and sulphurets took their place," which, as in California, no amount of pounding or attrition has ever yet or ever will render available for amalgamating methods.

Now, this is exactly what my amalgamator has disproved, for the free action of the four ingredients brought together within it are by its action completely amalgamated as far as the gold and quicksilver are concerned, and the water washes the tailings away. And it must be remembered that these results have been attained when my machine has been doing 40 per cent. more work than I calculated it to be capable of doing, or such a quantity as I should prefer being put through it—over 7 tons in 12 hours instead of 5 tons. It certainly is very gratifying to have done that which has never been done before, and which high authorities have said never could be done; but I must not trespass farther on your space, although the subject of the means of increasing our gold supply is one upon which much could be profitably written. The Mining Record of Chicago, Nov. 8, says:—One feature of the question affecting the supply of gold in addition to its constant and regular decrease, as shown by the records of production, is the increase in the demand for its use outside of monetary purposes. Carefully collected statistics show that the use of gold in the arts and sciences is largely increasing, and that this consumption has more than quadrupled in 30 years, and has quite tripled in 20 years; it is now more than five times what it was a century ago. While the financial and commercial demands are steadily and rapidly increasing the production is decreasing, and the consumption for other than monetary purposes is increasing at such a rate as to soon practically absorb the amount produced. It will probably be difficult to prove that any product under the influence of two such strong forces can stand without change in value. Decrease in production and increase in consumptive demands are two factors which never fail to produce the same results; and we claim that there is just reason, in view of the facts, to charge that gold has appreciated in value more than silver has depreciated. Silver to-day as a standard of value has more of the elements of stability than gold, for which so much is claimed. The visible supply and the known resources from which silver may be drawn render it easy to meet any demand which may be made, and thus positively secure and maintain a steady and regular standard of value.

In a day or two I will furnish you with many details of the contributions of North Carolina to the late exhibition at Boston, Mass.

Thomasville, Nov. 12. Henry Moon, M.E.

INTERNATIONAL MINING EXHIBITION.

Sir,—I noticed in the *Mining Journal* of Nov. 17 that the above question had been mooted by Mr. Zeehandelaar, who has lately represented the States of Utah, Wyoming, and Idaho at the late Amsterdam Exhibition, and I am glad to find that the subject of an International Mining Exhibition finds favour with others as well as myself.

You are I think aware of my views on this matter for some time past, and that I have been gradually maturing a scheme for bringing about a grand exhibition of the mineral wealth of the world, and the means of crushing, cleaning, drilling, and smelting of ores, with sectional plans of mines in their various phases of development.

For the late Paris Exhibition I proposed to the Commissioners for the colony of Victoria that we should send there a practical display of the mineral wealth of that colony, and a small battery of stamps to crush the quartz I proposed collecting from the several large mining companies who were favourable to my proposal. My views were favourably received by the Press throughout the colony, as also by some of the mining boards and representatives of the mining interest; it was only through the narrow-minded policy of the Commissioners that the colony of Victoria was prevented from making a grand display of her mineral wealth at the Paris Exhibition.

When at the Denver Exhibition (Colorado) last year I suggested to several of the exhibitors, as also by a letter published in the Denver Republican (Sept. 12, 1882), the desirability of sending the magnificent display of ores to London for exhibition, being satisfied it would have a great effect in drawing attention to the vast resources of the Rocky Mountains.

I am aware that mining has got into bad odour with a large section of the public through the disgraceful mismanagement and reckless expenditure of large sums of money by incompetent directors and managers in projects that held out little or no hope of success in the eyes of practical or disinterested men; but that will not long prevent the business of mining, more especially gold and silver, taking that high stand in public favour which its interest and importance deserves.

I can but think that the best means of drawing public attention to the vast mineral resources of the world lying practically undeveloped, as also the existing riches of the present mines now in actual development of their wealth, would be by means of a great International Mineral Exhibition in London; and, as I have already been interesting myself in maturing such a scheme, I shall only be too happy to co-operate with Mr. Zeehandelaar and others interested in developing the mineral resources of the different parts of the world, and especially that of gold and silver mining in America and Australia, where I am sure the subject would be taken up with great spirit, and, if properly handled, would be a great success.

Thomas Cornish, M.E.,
"Author of Our Gold Supply; its effects on Finance,"
"Trade Commerce and Industries," &c.

VOLUNTARY LIQUIDATORS, AND QUARTZ HILL GOLD MINING COMPANY.

Sir,—In the *Mining Journal* of Nov. 10 you reported a meeting of the above company at which it was openly stated that such meeting was formally convened in dread of me. Your readers may judge of the honesty and sufficiency of the pretext of the liquidators and their solicitor when they are informed that a very salutary provision is made in the Companies Act of 1862, whereby voluntary liquidators are required to call a meeting every year and place their accounts before the shareholders—a provision unfortunately "more honoured in the breach than the observance." I ventured to remind the liquidators in question of this wise provision and their evasion thereof; hence the meeting and the pointed but wholly unnecessary reference to myself; and yet, after all, this so-called meeting was an idle sham; no accounts were submitted; no information vouchsafed as to the proceedings, if any, against the promoters, some of them solvent men, which the liquidators were advised to institute at the time of their appointment. The sums to be recovered from this source alone would have gone a considerable way to compensate long-suffering shareholders.

Whilst on this subject and its abortive outcome, I would suggest, in the interests of shareholders generally, that the provisions of Mr. Chamberlain's Bankruptcy Bill, soon to become law, be extended to voluntary liquidations, and also those under the supervision of the Court. The appointment of amateur liquidators is a mistake. They seldom attend to their duties; they know not how to enquire, or what matters to investigate; they give no security for the moneys they receive; these are generally paid into their own banking account and so mixed up with their own transactions as to be practicably inseparable, whilst they rarely pass accounts in the manner prescribed by the statute, and altogether they exercise a discretion far exceeding the much-abused receivers and trustees in bankruptcy now to be superseded by responsible officials.

Let a short Act be passed ordering liquidators in voluntary windings up—(1) To pay all moneys received by them, or in their hands, to a separate account at the Bank of England, such account to be under the control and direction of the Chancery Division of the High Court of Justice, or the Board of Trade, and (2) That voluntary liquidators be ordered to submit and pass their accounts quarterly. We shall then have several hundred thousand pounds which are at the present moment of no benefit either to the State or to creditors or contributories, to whom such funds properly belong, available for distribution. E. Beall.

Queen Victoria-street, E.C., Nov. 29.

BRAZILIAN GOLD MINES.

Sir,—I have noticed that you frequently receive information from "Minas" relative to mining in Brazil, and in the Supplement to last week's Journal there appeared a letter from him, in which he begins by quoting that the Brazilian gold mines, basing their opinion on the information received from the manager and from other available sources, express an undiminished confidence in the productive value of the mines. "Minas" proceeds—"They are about to give the shareholders in the first instance a chance to put up more money and take 10 per cent. bonds. Where such available sources were found it is very difficult for one here to conjecture. The letters of Mr. Lott, the first manager of the works, to the directors should be published, and then some one (I do not recommend Mr. Lean) should examine the mine and property on behalf the shareholders." I am as much at a loss to conjecture where the other available sources are as "Minas" is. There is no one but myself here who knows whether the mines are rich or poor, but in Brazil their poverty is proverbial. It is not at all likely that "Minas" would recommend my again examining the mines, knowing that I recently did so, and with what ill favour my report was received—how severely I was censured for telling the truth.

Had it been possible that, gnome like, I had gone into the unbroken interior of the earth and there examined the ground, I could not have given a more faithful and exact report of the productive nature of their mine. In my report I gave them the produce in grains of seven distinct parcels of the ore taken from as many distinct places in the mine, and amounting together to 1070 tons—the yield of each parcel taken separate—and the average yield of the seven parcels—the 1070 tons—taken together, which average yield was 34·790 grains to the ton of stuff. This, I told them, could not be considered satisfactory, seeing that it requires 2 oits. or 120 grains per ton for an English company to pay the cost of working a mine in Brazil. It was on Nov. 20 last—(say) a year ago—that I posted my report on the mines to England, and throughout the present year, since Dec. 27 when I left the mines, as I have been informed, the yield of gold has been gradually but sensibly diminishing, thus proving the accuracy of my report. The stamping of seven parcels of ore, amounting to 1070 tons, taken from different places throughout the mine should have satisfied them as to the productive capacity of the ground even had I said no more. If what I have said be not sufficient to satisfy the shareholders as to the state and prospect of their mines without any further inspection they must be very hard to satisfy * * *

I understood that I was sent out to inspect and to render a faithful report, never for a moment suspecting that by such I should incur the displeasure, censure, and contempt of the board; but I unfortunately did so. No doubt they wanted and wished to have a share-selling report; but mine, as proved by a trial of 12 months, was a true, accurate, and faithful one...Were there a lode there on which to work it would be much more hopeful, but...there is not one. They have driven a level from the base of the mountain into its heart, and are there excavating the naturally auriferous ground peculiar to the province. Suppose that I had written a flowingly favourable report, and had told them that they were on the immediate eve of an increase of gold and of dividends, it would, no doubt, have pleased them; but what would they now, after the expiration of a year, seeing that matters have gone worse instead of better, have said to me? And what would they and the world have thought of my judgment as a professional miner?—*Nov.* 20. John Lean.

FRONTINO AND BOLIVIA COMPANY.

Sir,—In reference to the high working costs at the above company's mines, I will, with your permission, refer to one point which I consider very important. This company, in addition to the salaries and wages paid to their *employés*, numbering between 400 and 500 persons, provide them free of cost with house room, provisions, and medical attendance, thus entailing upon the company the business of farming and cattle keeping. The want of economy which such a system must necessarily produce is so obvious that it is quite unnecessary to dilate upon it, and I refer to it for the purpose of asking if our directors cannot adopt some plan which would supersede so objectionable a system? One plan which suggests itself to me is to rearrange the wages paid to the *employés* of the company upon a fair and equitable basis, and then if it is necessary to provide house room and provisions, which our superintendent says it is from the peculiar circumstances of the locality, to charge for rent and provisions such prices as will pay a fair percentage upon the capital employed to provide these things, of course including a certain percentage for depreciation and dilapidation. The accounts for these things should of course be kept entirely distinct from the mining costs. It has been found necessary in at least one mine that I know of to abolish the system of provisioning the *employés*, to the great advantage of the concern; and a similar result would, I have no doubt, be produced in the case of our mines.—*Nov.* 23. Edward Dearle.

TECOMA SILVER MINING COMPANY.

Sir,—The rumour has been revived that the Tecoma Mine, in Utah, is to be reworked. As a shareholder, I do hope something will be done with the property. About a year or so ago an American gentleman came over here and made certain offers to the company to resume work at the Tecoma. I believe the offer was something like this—A mineral property adjoing the Tecoma was to be worked along with the Tecoma Mine for convenience sake. I think the work was to be carried on by means of a tunnel, and to do this there must be working arrangements between the Tecoma Company and the American company I have referred to. Through some little hitch in the negociations the matter unfortunately fell through. I now hear that offers of a similar kind are again to be made to the Tecoma Company, and I would suggest through your columns that the directors call a meeting of the shareholders when the new proposals are brought forward. I do not think the shareholders in the Tecoma Company know what an extensive property they have in Utah. Why, their run on the ledge matter, or on the lode as we should call it in this country, is about 8000 ft., enough for half-a-dozen mining companies to work. From what I can understand of the proposed working arrangement offered by the neighbouring American company, the Tecoma property would not be increased in area, but a tunnel would be run so as to cut the ledge matter in the two companies' mines at depth. This is now being done in the Last Chance Mine in Utah, and in this case the first 500 ft. of tunnel was made at a cost of only 35s. per foot. It would not be a very expensive matter for a tunnel to be driven on the Tecoma property, and as I understand the Americans would find a portion of the money, I shall be glad to hear there is something done in the matter.

Barnstaple, Nov. 28. J. J.

CANADIAN COPPER AND SULPHUR COMPANY.

Sir,—I wish to ask through your columns how it is that whilst the books of this now very small concern close on Sept. 30 of each year the accounts are never presented to the shareholders before Christmas; is it not possible to make them up in a month? Would it not be advisable to issue a half-yearly report to the long-suffering shareholders of this unfortunate concern, and could Capt. Bennetts not be instructed to state the amount of the regulus made each week, and the value thereof? I observe a circular has been issued by one of the directors advocating the establishment of a company for the manufacture of sulphuric acid from the company's waste products; but the statements made are so very contradictory that criticism may be delayed until the report of Messrs. Taylor's agent is issued. Although my name does not appear in the list of shareholders, yet I possess a considerable indirect interest in this company.

Glasgow, Nov. 28. John Brown.

COLLIERY EXPLOSIONS.

Sir,—The evidence given at the adjourned inquest on the 68 unfortunate victims of the colliery explosion near Accrington should receive careful attention. The verdict in this case, as indeed in all similar cases, is most disappointing and unsatisfactory. Only on the 13th inst., at an inquest on the bodies of 20 poor miners whose lives were sacrificed by an explosion near Barnsley, the jury returned the following verdict:—"We find that William Fisher and others were killed on the night of Oct. 18 in the Wharncliffe Carlton Colliery, but how the explosion was caused there is not sufficient evidence to show." At Clayton-le-Moors yesterday the verdict of the jury was—"That the deceased, Thomas Mackintosh, and others, received certain injuries at Moorfield Pit, Altham, by an explosion of gas on the 7th inst., of which they died, either at the pit or at their own home afterwards; that the explosion was, in the opinion of the jury, caused by a sudden outburst of gas, but how the same was exploded there is not sufficient evidence to show."

This stereotyped form of verdict in the case of colliery explosions is becoming a scandal, reflecting discredit on the tribunal by which the enquiry is made. How would the public feel if similar verdicts were given as to the result of enquiries into the cause of fatal accidents on railways, where only half-a-dozen were killed at a time, and not scores or hundreds, as often happens at collieries? I have had lengthened experience in connection with collieries and colliers, and have frequently called attention to the disastrous consequences of shot-firing by gunpowder, to the dangerous character of the so-called safety-lamps now in use, and to the unsafe and uncertain method of ventilating a mine by means of a huge furnace at the bottom of the upcast shaft. All these dangerous elements were present at the Moorfield Pit, as they are in many other collieries to-day.

My friend, Mr. John Higson, F.G.S., mining engineer, who gave evidence yesterday, in his valuable work "Explosions in Coal Mines", —with reference to blasting by gunpowder, says—"I do most emphatically state that in mines which emit explosive atmosphere—and there are few, if any, which have hitherto been brought under my notice which do not—no lengthened period will pass without sooner or later having a conflux of circumstances which must inevitably result in a casualty, more or less intensified by the circumstances that are connected with the mine in which it occurs."

With respect to the lamp which is put into the hands of miners as a "safety-lamp," enough has been said by the witnesses at the two

inquests just held to show how utterly unreliable it is, and indeed how dangerous an instrument it becomes where gas combined with a high state of ventilation exists. It is nothing less than a fatal man-trap, the use of which ought to be specifically prohibited by the Legislature, especially as Mr. Martin, one of the Government Inspectors of Mines, declared yesterday that "the authorities, when they saw the Davy lamps in use, had no power to prohibit their use.'

I do most earnestly hope that the Press will take this matter up, as the collier seems totally unable to protect himself against these constantly occurring disasters, which are clearly preventable if proper means are taken to effect that object. ELLIS LEVER.

Culcheth Hall, Bowdon, Nov. 23.

THE VERY LOW PRICE OF LEAD.

SIR,—It appears to me that the time has come when steps ought to be taken for relieving the lead trade. Many of your readers are experienced in this industry, and know the great risk, experience required, and disappointments which have to be endured in producing lead. It is not so much their attention as that of the financiers, directors, and private gentlemen interested in lead I wish to draw. If a few largely interested gentlemen would give this matter a little attention things could be easily improved. What encouragement is there with the market value continually falling, as it has done for the last few years? These low prices are very seriously felt in Spain, from whence steps towards an improvement should receive good support. Perhaps some experienced gentleman will kindly reply through the *Mining Journal*. LEADER.

London, Nov. 27.

MINES IN THE CALLINGTON DISTRICT—BICKTON SILVER-LEAD AND COPPER MINE.

SIR,—It may be interesting to many of your readers to be enabled to follow up the notices of your two correspondents' (Mr. J. Buckingham, May 2, and "J. J. S.," July 17) reports on this sett. Both gentlemen expressed very strong opinions upon the favourable confirmation of the ground; it will, therefore, be gratifying to them, and interesting to some of your readers, to learn how the predictions in the two reports have been verified since your correspondents visited the mine by the discovery of two valuable lodes, one on Aug. 27, which proves to be a copper lode which the captain "considers to be of great value and a splendid addition to our already valuable property," the other on Nov. 19, "a silver-lead lode 4½ to 5 ft. wide and underlies west, while another lode underlies east, so that they will form a junction in depth. This is a very important discovery, and I am strongly of opinion that there is not such another series of masterly lodes to be met with anywhere as we have discovered in Bickton sett." H. W. W.

Cannon-street, Nov. 27.

MANAGEMENT OF MINES.

SIR,—I have read with interest the remarks of your correspondents with reference to the management of slate quarries, and I feel there is much to be said in the same strain with regard to the management, or rather mis-management of mines. How often do we not see the charge of valuable mines in the hands of men who are utterly incapable of conducting the necessary operations successfully. To no industry do the words, "It is not in mortals to command success," &c., more aptly apply than to mining; but in how few instances do we find success really deserved?

Mis-managers may be divided into two classes—1st, The man who depends entirely on his practice, who regards theory as a modern invention, and who conducts all his operations by "rule of thumb," disdaining to avail himself of the improvements of science; 2nd, The man who, without the slightest knowledge of the duties, is pitchforked, by either influence or force of circumstances, into the position of manager; mayhap he has been connected in some slight way with a successful mine, and, on the strength of this, comes out as a full-blown mining engineer, and is entrusted with the charge of a valuable mine. He begins to flounder from the first, and goes on, only to become more hopelessly at sea, involving the mine in endless difficulties, and squandering the shareholders' money to no purpose. Of the two classes he is immeasurably the worst, as he is deficient in both practice and theory, while the other only wants theory. The whole question is of vital importance to shareholders, for mines themselves are so much a speculation that nothing of the nature of a speculation, or the element of chance, should be allowed in choosing a manager.—*Marbella, Spain, Nov.* 24. W. MICHELL VIVIAN.

FREE TRADE AND METALLIFEROUS MINING.

SIR,—Permit a few remarks to appear in the *Mining Journal* from one who feels deeply interested in our metalliferous mines. What has prompted me to write is the very low prices paid at present for our lead and copper ores. I believe that there is nobody now living that can remember them averaging so low a price as they have done for the last three years, and with even but a very doubtful prospect for better prices; and the consequences arising from this state of things is very serious indeed to this country, and especially so to those districts in which our lead and copper mines are situate.

In Cardiganshire, once the El Dorado of silver-lead mining, the pursuit is nearly, if not quite, at an end, and that not because there is not an abundance of rich mines to work, and also an abundance of new ones to develope, but simply and solely because we are so heavily handicapped by our acute Yankee cousins on the other side of the Atlantic, with their heavy and *ad valorem* tariffs, and who are putting money largely into their pockets at our expense; and I guess that they have a perfect right to do so, and to laugh in their sleeves at our silly stupidity in allowing them to do it. The writer of these few lines has been a free trader all his lifetime, and would certainly much rather find the United States adopt Free-trade principles in a liberal and just spirit than he would ask the English Government to retaliate; but in face of the fact of the Americans not doing so, and of there not being any likelihood of their doing so during the present generation, what ought to be done. Well, that is obvious; we should meet the denizens of the United States upon their own principles, inasmuch as they have fairly refused to adopt our Free-trade tariffs after waiting for them nearly 40 years.

Surely we have set the example long enough, and patiently, without receiving any return at the hands of our dear cousins, and it is not America alone that we are trading with at a great disadvantage to ourselves; but there are others also—our Free-trade hobbies seem to have carried us into a fog altogether. I think, Sir, it is now time, if not past time, that we should wake up, pull ourselves together, and just ask ourselves the question—Wherever have we been travelling to? No one in his senses, of course, would think of proposing that heavy duties should be placed upon anything pertaining to the food of the people. But with our minerals and manufactures the case is very different. If England continues to allow her manufactures to be heavily handicapped by foreign nations it must naturally tell against her eventually, and of course her superiority in trade and commerce must decline.

Some people would say that for England to put a duty upon American, Spanish, Belgian, and other countries ores, would be a retrograde movement; but I fear that these same people have read Adam Smith, McCulloch, John Stuart Mill, and other great political economists to but a very bad purpose, and have never properly comprehended them. However of this I can have no manner of doubt. Had the late lamented Richard Cobden been now alive (whom the writer knew well) no one would have condemned the mode by which those tariff are dealt with at present, and under present circumstances more severely than he, and he was considered the great apostle of Free-trade. What we want sadly is a really Free-trade, and not a fettered trade, or tariffs adjusted so as to be all on one side.

We want no special favours in this matter, all we want is to be placed on a fair footing, and not to be kicked when down, and if we had only fair play we shall be able to hold our own. Some landowners I know have not shown much sympathy with those who are struggling with the mines during these very bad years; but, on the contrary, have shown much greediness—that is another way of killing the goose that lays the golden eggs. There are, however, in the Principality some very honourable exceptions, and it is no invidiousness to mention Sir W. W. Wynn, Bart., and his agents, as belonging to the latter class; they have shown great forebearance and patience in these matters, and no doubt but the very honourable leniency shown by these gentlemen during these very trying times will be, it is hoped, yet amply rewarded, as it is well deserves to be. I must beseech your pardon, Mr. Editor, for so transgressing until the next time.—*Llanidloes, Nov.* 24. P. D.

IMPORTANT DISCOVERY OF SLATE AND LEAD IN MERIONETHSHIRE.

SIR,—Observing in the Supplement to the *Mining Journal* of Nov. 24 a letter relative to the above, signed "W. W. W.," in which he makes use of my name as the owner's engineer, I think it my duty now to state that the assertions made in the paragraph signed "W. W. W." will be found correct. I may further state that the reason this property has not sooner been brought to light is in consequence of a dispute as to the right of minerals. I am pleased to say this dispute is now satisfactorily arranged, and a mineral lease granted for 24 years at a moderate rental, merging into the royalty of 1-15th. I shall make no comment as to the value of this property (as it will soon speak for itself), but merely state I shall feel a pleasure in showing any person over the property, and point out to them its advantages and disadvantages. They can then judge for themselves as to the value of such a discovery. In the letter I see mentioned, rocks 56 in. This should be 56 lbs. solid lead; the discovery holds good.—*Nov.* 28. GEORGE SPARGO.

SLATE AND SLATE QUARRYING—No. III.

SIR,—Having in my previous articles made several rambling remarks on this subject, so I now deem it expedient to limit my observations to a certain point on this subject, and that as concisely as possible—therefore, I shall here note slate quarrying on the open system. Slate quarrying, it is well known, is carried on either on the open or underground systems; and economists are often at a loss to know which system to adopt as the most beneficial to their mutual interests. But as time and space will not allow to treat of these systems together, it must, therefore, suffice in these notes only to make an occasional allusion to the latter. The modes of opening or working slate quarries are generally governed by various circumstances, consequently many quarries are often worked on the one system, when they ought to be worked on the other. The open system should invariably be always adopted as far as practicable for the following eminent reasons, unless there should be some very prominent and just reasons for the contrary:—

1.—Because by working on this system there is no need of leaving any of the rock by way of pillars for supporting the top, and thus fully 7-10ths more of the rock is achieved.

2.—None of the rock is destroyed in this way by excavating the free sides excepting that in the first bargain; this bargain, of course, makes a free side for all the other bargains on the same floor.

3.—Men can do nearly double the amount of work in the open to what they can perform in the dark and smoky underground.

4.—The slate making can be carried on far more regular and constant, as the men would have no time to lose in excavating free sides and squaring pillars as needed in an underground quarry.

5.—It really effects an economy in everything, inasmuch as less rails, sleepers, and, in fact, less of everything necessary for the working of a quarry is required by working on this system, the works being compact and concentrated. It may here be suggested that the most advantageous position for opening such a quarry is on the side of a hill, although some are opened on flat ground, and are, therefore, worked with great disadvantage. Those opened on the hill sides possess a double advantage to those worked on the flat, inasmuch as they have a natural drainage for all their water, as well as possessing the great advantage of convenience for depositing the *debris*, whereas those on the flat have to pump all their water and draw up all their stuff by means of expensive machinery, all of which are wholly dispensed with in the hill side quarries. Nearly all the Carnarvonshire quarries are worked on the open system, so their proprietors avail themselves of the great economy and fructify connected with this theory, and are, therefore, enabled thereby to tide through the tardy times of depression (as it may be said) without suffering fatally from its prejudicial effects.

I have compiled a progressive scale in two tables of developing a slate quarry on the open system; but, of course, I must say that this scale is not appliable to all sorts of slate nor to all kinds of places. They have been carefully worked out with a view of developing a slate quarry situated on the acclivity of a hill or mountain of a moderate angle of elevation, and where nothing but the ordinary outcrop of slate is to be cleared. Where, also, the slate is abundant and of good quality, the texture and quality being what it may be desired for the production of good and marketable slates, the slate must also be of good cleavage as well, for the yield or production of slates depend to a great extent on the virtue or existence of the cleavage it may possess; and, further, it is not enough for any place to possess those merits, but it must also be exempt from the prejudicial effects of contortions and intrusions, for it is well known that the presence of such pernicious intruders in slate too often convert it into a mass of nothing better than a chaos or a formation of futile shale. To whatever place these virtues can be attributed, or where they are fairly concentrated in the main, it may be safely inferred that such a place has a good chance for success, provided that a sufficient amount of capital be applied for its thorough development, and that properly and judiciously expended.

The column of loss and capital required, in table 2, shows the amount of the net capital required, and not the gross amount. This, no doubt, will be conspicuous enough to all who are familiar with slate quarrying. As it is always borne in mind that no quarry is ever able to dispose of its produce as fast as it is produced at all times, consequently large stocks of slates often accumulate sometimes to the value of 20,000*l.* or 40,000*l.* Therefore, it becomes necessary to provide an extra amount of capital equivalent to the cost of producing the standing stock, and so by such a provision the works can be kept regularly going with great advantage. And it is sufficiently evident that whatever amount of capital may be invested judiciously and equitably expended on any genuine and candid slate vein that the investors can reckon for certain emoluments of no small significance in remuneration for their judicious investments. The superiority of slate quarrying investments over those of mining are certainly unquestionable, and may be easily demonstrated by the enormous revenues and profits derived from this source, so the only thing necessary on the part of capitalists is to be wise in their selections and prudent in their arrangements to ensure success.

Blaenau, Festiniog, Nov. 20. THOS. GILL JENKINS.

GOLD REDUCTION MACHINERY.—Messrs. DAGLISH and CO., of the St. Helen's Engine, Boiler Bridge Works, and Foundry, Lancashire, may be congratulated upon the success which they have achieved at the Madrid Exhibition, which is understood to be the first exhibition in which they have taken part. Their agent in Madrid (Nov. 18) writes:—I have much pleasure in informing you that the "photos" of your gold reduction machinery you sent me have been awarded honourable mention, which is certainly satisfactory for mere drawings. And the machinery itself been here in our Exhibition it should have had a gold medal prize. I will send you Official Gazette publishing awards. We shall have another Exhibition in 1885. I hope you will then exhibit your machinery.

HOLLOWAY'S OINTMENT AND PILLS—GLAD TIDINGS.—Some constitutions have a tendency to rheumatism, and are throughout the year borne down by its protracted tortures. Let such sufferers bathe the affected parts with warm brine, and afterwards rub in this soothing ointment. They will find it the best means of lessening their agony, and assisted by Holloway's pills, the surest way of overcoming their disease. More need not be said than to request a few days' trial of this safe and soothing treatment, by which the disease will ultimately be completely swept away. Pains that would make a giant shudder are assuaged without difficulty by Holloway's easy and inexpensive remedies, which comfort by moderating the throbbing vessels and calming the excited nerves.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

DOLBY'S PATENT FOOD PRESERVING, CAN MANUFACTURING, AND PURE GRASS BUTTER PACKING COMPANY (Limited).—Capital 20,000*l.*, in shares of 10*l.* To manufacture, sell, and grant licenses for certain patents and apparatus connected therewith. The subscribers are—J. G. T. Dolby, Dulwich, 200; T. Johnston, Forest Hill, 25; F. Chalk, Forest Hill, 25; J. Hodson, St. John's, 25; C. Pearce, Forest Hill, 15; W. T. Wright, Campabell, 5; G. E. N. Ryan, Teddington, 5.

THE LONDON AND LANCASHIRE PATENT WHEEL COMPANY (Limited).—Capital 25,000*l.*, in shares of 1*l.* The usual business of carriage builders and wheelwrights in conjunction with certain patents. The subscribers (who take one share each) are—J. Thorbarn, Ditton; J. T. Hall, Prescott; J. Brockwell, Wigan; F. Richards, Liverpool; R. White, Widnes; M. Williams, Lancaster; J. Taylor, Wigan.

THE CANNOCK AGRICULTURAL COMPANY (Limited).—Capital 15,000*l.*, in shares of 5*l.* In Staffordshire and elsewhere the business of farmers, graziers, manufacturers of artificial manure, &c. The subscribers (who take one share each) are—W. H. Donevan, Rushall; L. M. W. Lewis, Walsall; T. H. Stanley, Rushall; H. R. Hart, Cannock; W. W. Lewis, Walsall; A. H. Lewis, Walsall; W. L. Lewis, Walsall.

VERSMANN'S SANITARY MOSS LITTER COMPANY (Limited).—Capital 50,000., in shares of 5*l.* Acquiring the property and carrying on the business of Versmann's Moss Litter Company (Limited). The subscribers (who take one share each) are—D. C. Reynolds, 4, Henrietta-street; A. Seeley, 6, Duke-street; T. Doubtlett, Little Ilford; C. Shaw, Southwark; G. C. Hopper, Bayswater; W. Durie, 29, Beresford-road; J. Fox, 2, Rosslyn-road.

THE ESTATES AND PROPERTY TRUST (Limited).—Capital 100,000*l.*, in shares of 5*l.* The usual business pertaining to a land company and building society. The subscribers (who take one share each) are—W. J. Pountney, 16, Upper Baker-street: C. W. Beesley, 153, Hartington-road; E. J. Church, Clapton; R. Garbutt, 22, Young Park; E. West, 40, St. Paul's-road; W. C. Cross, Tottenham; J. A. Norton, 48, Gillingham-street.

THE CLAYTON TIN-PLATE COMPANY (Limited).—Capital 22,000*l.*, in shares of 55*l.* To purchase certain tin-plate works situated in Wales, and to continue the business in connection therewith. The subscribers (who take one share each) are—R. Williams, Landore; W. Hosea, Landore; W. S. Hosea, Landore; T. Freeman, Swansea; D. Griffiths, Llansamlet; D. Griffiths, Pontardulais; W. Watkins, Swansea.

DENNY'S ANTI-FOULING PAINT COMPANY (Limited).—Capital 120,000*l.*, in shares of 10*l.* To acquire, use, vend, or otherwise dispose of certain patents relating to certain compositions for coating ships' bottoms, &c. The subscribers (who take one share each) are—E. A. Inglefield, 99, Queen's Gate; J. Forsey, 16, Water-lane; J. S. Campbell, 1 Queen's Gate-place; R. Rice, Croydon; A. Barff, 16, Ashburn-place; H. T. Cole, 17, Prince of Wales' Terrace; H. M. Eiliot, Reading.

THE BRANDLEY MINING COMPANY (Limited).—Capital 25,000*l.*, in shares of 1*l.* To acquire by purchase or otherwise, mines and mineral properties and hereditaments situated in the county of Cumberland or elsewhere, and to adopt and carry into effect an agreement made between H. B. Vercoe and H. Jenks of the one part, and G. M. Hinton, as trustee for the company, of the other part. To carry on and conduct the business of raising, working, getting, selling, and otherwise disposing of lead, silver, blende, calamine, and other ores and minerals, and to carry on generally in all branches the operations of a lead mining company. The subscribers are—G. Crank, Waterloo, tailor, 1000; B. B. Chadwick, Walton, gentleman, 1000; D. Dunn, Birkdale, gentleman, 100; T. Holden, Burnley, hat manufacturer, 1000; H. Cain, Seaforth, butcher, 1000; J. S. Elmslee, Liverpool, manager, 1; T. C. Weaver, Liverpool, agent, 1. The following constitute the first board of directors:—G. Crank, B. B. Chadwick, T. Holden, and H. Cain. Future directors will be called upon to hold a qualification of 200 shares.

BRITISH AND FOREIGN HORSE AND CATTLE BEDDING COMPANY (Limited.)—Capital 5000*l.*, in shares of 1*l.* The business of manufacturers of and dealers in every kind of horse and cattle bedding and litter. The subscribers (who take one share each) are—J. W. Alison, Acton; E. M. Fraser, 4, Copthall Buildings; L. McIntosh, 262, Goldhawk-road; R. Furnley, Tottenham; L. Striein, Richmond; C. S. Nicholson, 113, Tufnell Park-road; J. S. Morrison, Blackheath.

N. GREENING AND SONS (Limited).—Capital 40,000*l.*, in shares of 20*l.* To continue a business of engineers, iron and steel manufacturers, and merchants, &c., established at Warrington. The subscribers (who take one share each) are—N. Greening, Warrington; L. Greening, Warrington; J. Greening, Warrington; B. Greening, Warrington; M. E. Greening, Warrington; E. Greening, Warrington; T. B. Carter, Warrington; T. Grime, Warrington.

THE USK SIDE ENGINEERING AND RIVET COMPANY (Limited.)—Capital 20,000*l.*, in shares of 10*l.* At Newport (Mon.) or elsewhere the business of engine builders, boiler makers, founders, smiths, &c. The subscribers (who take 100 shares each) are—J. Fry, Penarth; T. E. Watson, Newport; C. M. Jacobs, Cardiff; G. Fisher, Cardiff; A. C. Jones, Newport; A. J. Stevens, Newport; G. B. Fry, Newport.

THE SIMMONS CONSOLIDATED GOLD MINING AND MILLING COMPANY (Limited).—Capital 100,000*l.*, in shares of 1*l.* To acquire the Foot and Simmons lode, the Next President lode, and the Bledsoe lode, all of which are situated on the northern slope of Gregory Hill, Gilpin County, in the State of Colorado, also the lands, tenements, mill site, and claim in Black Hawk in said county, together with a 25-stamp steam quartz mill and all appurtenances and things connected therewith, for the purpose of exploring and developing the several lodes, and carrying on all operations incidental to a gold mining and milling company. The subscribers (who take one share each) are—H. W. Pane, 38, Leadenhall-street, insurance broker; J. R. Postlethwaite, 12, Clement's Inn, solicitor; V. Woods, 36, Great George-street, C.E.; O. Jones, 69, Great Russell-street, mechanical engineer; G. T. B. Terrell, 11, Gray's Inn-square, articled clerk; J. H. Worthington, 323, Vauxhall Bridge-road, accountant; J. Storry, 100, Leadenhall-street, distiller. The qualification for a director is the holding of 100 shares. The board must not number less than three or more than seven, and the first directors shall be appointed by the subscribers.

THE COLONIAL GASWORKS COMPANY (Limited).—Capital 80,000*l.*, in shares of 10*l.* To carry out certain contracts in connection with New South Wales. The subscribers (who take one share each) are—A. Nicholas, Stoke; J. Tindale, Durham; E. P. Sherwood, 99, Belvedere-road; G. L. Sherwood, 99, Belvedere-road; R. C. Coward, St. Thomas' Hospital; H. S. Smith, 60, Shepstow Villas; W. Belton, Shrewsbury.

BIRMINGHAM AND MIDLAND TRAMWAYS (Limited).—Capital 500,000*l.*, in shares of 10*l.* To construct, equip, lay down, maintain, and work a system of tramways between Birmingham and Dudley, and in the neighbourhood. The subscribers (who take 50 shares each) are—C. A. T. Otway, 13, Grosvenor-square; T. P. Hearn, 122, Norfolk-terrace; J. S. Peirce, 7, Bank Buildings; E. J. L. Twyman, Great Malvern; T. Smith, Birmingham; V. B. Tritton, 63, St. George's-square; R. H. Taunton, Birmingham; B. T. Sadler, Birmingham.

THE MAYFAIR MANSIONS COMPANY (Limited).—Capital 200,000*l.*, in shares of 10*l.* To acquire and deal in land, houses, &c., in the western and other districts of London. The subscribers (who take one share each) are—H. Wyatt, 37, Melrose Gardens; C. H. Gurney, 7, Upper George-street; J. Mason, 257, Uxbridge-road; P. D. Pierce, Islington; G. Unger, Highgate; A. A. Cubitt, Holloway; W. G. Brown, 7, Upland-road.

THE STANSTED CENTRAL HALL COMPANY becomes re-registered and incorporated under the Limited Liability Acts.

THE UNION PUBLISHING COMPANY (Limited).—Capital 50,000*l.*, in shares of 2*l.* To acquire, print, publish, and vend the Financial and Mining News. The subscribers (who take one share each) are—M. A. Pallen, 131, Regent-street; C. E. Marks, 30, Dorset-square;

A. D. Livandair, 32, Broad-street; J. Brad, 15, Argyll-street; H. Campbell, 10, Moorgate-street; J. B. Crosby, 10, George-yard; Z. Hurley, 97, Nation-street.

The Steam Supply Association (Limited).—Capital 20,000*l.*, in shares of 5*l.* The application of gas to supplying light and steam to factories and other works, &c. The subscribers are—J. C. Johnstone, Southend-on-Sea, 10; T. V. Gurney, High Barnet, 10; W. Morris, 21, Hollydale-road, 1; F. G. Young, 6, Churton-place, 1; W. Amies, Croydon, 1; A. H. Barnett, New Southgate, 1; G. W. Peacock, Stepney Green, 1.

National Steam Coal Company (Limited).—Capital 150,000*l.*, in shares of 500*l.* The searching for, raising, and winning of coal, Cannel, slack, ironstone, clay, and any other minerals, ores, and substances whatsoever, and the manufacture and sale of shale, coke, &c. The subscribers are—E. H. Watts, 85, Gracechurch-street, 105; J. H. Johnson, 23, Billiter-street, 30; J. H. Bude, Newcastle-on-Tyne, 30; W. Flux, 3, East India Avenue, 15; E. J. Grice, Newport, 60; G. W. Wilkinson, Risca, 10; L. Wiese, 9, Mincing-lane, 10; C. Mitchell, Newcastle-on-Tyne, 30; J. Williams, 9, Gracechurch-street, 10.

The Adela Steamship Company (Limited),—Capital 5000*l.*, in shares of 10*l.* The purchasing, owning, and working said steamship. The subscribers (who take one share each) are—W. Henry, Liverpool; J. Wingate, Liverpool; J. Kennedy, Liverpool; T. Barker, Liverpool; W. J. Shepherd, Liverpool; R. A. Beaver, Liverpool; W. W. M'Donnell, Liverpool.

The North Kent Brickfields (Limited).—Capital 30,000*l.*, in shares of 5*l.* To purchase a certain property situated at Northfleet and Swanscombe, Kent, and to carry on the business of brick and tile makers, &c. The subscribers (who take one share each) are—G. W. Miles, 5, Alfred-place; W. Clark, Peckham; G. O. Hodson, 23, Great Coram-street; H. B. Russell, Wimbledon; T. L. Allen, 38, Southampton Buildings; G. J. Tyler, 183, Shakespear-road; J. Sammers, 21A, Besborough-place.

Meetings of Public Companies.

DEVON GREAT CONSOLS COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, Austin Friars, on Wednesday,

Mr. Peter Watson (the Chairman and managing director) presiding.

Mr. W. H. Allen (the secretary) read the notice convening the meeting. The accounts and agent's reports were taken as read.

The Chairman having read the report of the directors said—Gentlemen: I deeply regret that we cannot show you a better account than we have on the present occasion. Yet at the same time I think, looking at the large losses which other mines are making in Cornwall and Devon, that under all the circumstances we have not done badly. The costs are charged up as closely as possible. We have charged for the staves the amount which is therein stated; we have been sinking shafts and opening out the mine as vigorously as possible, and we have—which is not mentioned in the report—not as many mines in Cornwall have arrears of two, three, or four months of coals to charge for, but we, on the other hand, are in the reverse position, for we have about three months' stock of coal in hand and paid for in the accounts, and when I tell you our consumption of coals is something like 300 or 350 tons a month I think you will see that that is not an inconsiderable item in the finances of your company. We have also a considerable quantity of timber on the mine all charged for in our accounts, which, as I have said, have been brought up as close as it is possible to bring them. We have, as you will see by the report, increased our arsenic works and repaired them, and we have laid out a good deal of money there. Whilst on the subject I may tell you that whereas in 1876 we sold and credited 8585*l.* worth of arsenic, we have credited this half-year something like 12,028*l.*, which is an increase of nearly 50 per cent. over what it was in 1876. Then with regard to the copper ore question, in 1876-7 we sold as nearly as possible the same quantity of copper ore for the half-year as we have done in the last half-year—that is to say, in the half-year 1876-7 we shipped 5187 tons of copper ore, which realised 18,574*l.*, or 3*l.* 11s. 6d. per ton, whereas in this half-year we have sold 5260 tons, realising 9995*l.*, or 1*l.* 18s. per ton; or, in other words, about half the price we received in 1876-7. This is a very unfortunate state of affairs, but I cannot help it; your managers cannot help it, and you, gentlemen, as shareholders, cannot help it. Such is the state of your affairs. We cannot make the ore better than it is, neither can we raise the price of copper. We have to take the ore month by month, and sell it for what the smelters will give to us. It is sold by Ticketing, in the ordinary acceptation of the term; but whereas some years ago there were, I think, 14 smelters there are now only three or four, and we are totally at the mercy of the smelters as to what they give us. Something was said the other day of what a farce the present Ticketings were; but what can we do? The only thing that can be done would be for some of the mine management to amalgamate together, and get the sanction of the lords to ship the ore to Swansea, where it has to go ultimately, and from whence in return we should be able to ship our coals back again. If we went there we should have greater competition for our ores. However, that is a matter we have no control over at the present time. We are bound under our leases to sell our ores at the Ticketings. The half-yearly report of Capt. Richards is before you, and at page 14 you will see what has been done at the arsenic works. I will now go to the reference in the report to Watson's shaft. In the last four or five years we have spent a very large sum of money in sinking this shaft. My own feeling, and the feeling of the agents and everybody else there, was that if we started this portion of the mine again we believe we might open out a new mine entirely. The ground has been very hard, and we have spent a good deal of money there in putting everything in order. We now appear to be on the top of something which will repay us in a very short time. At any rate, we are now nearly 9 fms. below the 100 fm. level, where the lode is 4 ft. wide, and is producing fine stones of ore, as you see here, from the bottom and the centre of the shaft. [The Chairman referred to some fine stones of ore on the table.] Passing on, because Mr. Bawden and Capt. Richards are present, and will more particularly tell you as to the underground operations; we come to the most important point I consider for the shareholders to consider at the meeting, and it is to consider whether it is not desirable, having reference to the report of Capt. Josiah Thomas, of Dolcoath, who inspected the mine, to sink deeper, with the view of getting returns of tin. The report of Captain Thomas was sent to the shareholders on July 11, and in that he strongly recommended the sinking of the shafts deeper below the present 205 fm. level. Capt. Thomas's report was sent to Capt. Richards to make his remarks upon, and you will find that on Sept. 24 Capt. Richards gives a full account of the tin prospects. Capt. Richards has had samples of the ore assayed for tin since the early part of 1882 up to the present day—ore taken from the various levels in which tin has been found. This is some guidance to us in considering whether we should sink deeper as is proposed. If we do so we may open out—and I think the chances of our doing so are very good indeed—a rich tin mine. I do not like to say too much; but such is my opinion. I have lately been to a mine in which I am a very large shareholder—West Seton—which is further away from the granite range, in the Camborne district, than we are at Devon Consols. Their shaft is now from 225 to 230 fms. deep, or, in other words, something like 20 or 25 fms. deeper than we are at Devon Consols in a similar strata. They have a lode in the shaft there valued at 80*l.* per fathom; and I think that that really augurs well for our success in depth. The shaft which it is proposed to sink is that called the "Railway" shaft. I do not think there is much to detain you here to-day upon this point; but I consider that it is a point of vital importance. We have, assuming that you will give us your consent, made preparations for the sinking of this shaft with all the expedition possible, and, in fact, we started sinking there last Saturday. Of course, if you say we are not to sink there the men can be taken away and put to another place; but my strong recommendation, based on the present indications, is, that we should sink that shaft as rapidly as possible. That is the opinion of Capt. Thomas, of Capt. Richards, and, in fact, of everybody who knows the property. (Cheers.) Capt. Richards states that the lodes still maintain their size and character, and the prospects must be very encouraging. Two or three years ago we entered into a big contract to deliver 30,000*l.* worth of arsenic—the largest contract for arsenic ever entered into in this country. (Cheers.) The shareholders were at once informed of that contract. We were told that Devon Consols could never make half the quantity; that they never had it in the mine, and could not sell half the contract. Well, that contract has been fully carried out under the terms agreed upon, every ton of stuff has been delivered, and we have since made contracts for something like 20,000*l.* or 25,000*l.* worth of arsenic each year. All these remarks are made, I presume, to endeavour to depreciate the value of our property, and they only deserve to be treated in one way. (Hear, hear.) Then, a few weeks ago it was said that Devon Consols must have a 1*l.* call; but we, the directors, have no such intention. We do not want to have anything to do with calls. You have the statement of accounts before you with everything charged up, and more than charged up; you have a large stock of coal, timber, and staves, and everything that we require on hand and paid for. (Cheers.) We have to bear the effects of very hard times in mining. All round without exception there are the same complaints, and I think there are very few mines in Cornwall or Devon which are doing anything like what we are at the present time. You must remember what an enormous expenditure which is necessary to keep in order and good repair all the machinery, and to carry out the various developments which have been detailed to you. Every year in our annual reports we give you a statement of the enormous extent of our underground operations, and I, as the largest shareholder but one in the company, certainly think that our agents and all engaged in the mines have done as well as could be expected, and I only hope we shall continue to push forward all our operations vigorously. If we had not extended and improved our arsenic works we could not have increased our sales of arsenic from 8000*l.* in the corresponding half-year of 1876 to something like 12,000*l.*—or an increase of 50 per cent.—in the past half-year. We must keep pace with the times in the way that we are doing. (Hear, hear.) I think that, under all circumstances we may congratulate ourselves that we are not in such a very bad position after all. We are looking very well at Watson's shaft, and within the last few weeks we have for the first time been getting both mundic and copper ore from that shaft, and that will, of course, increase our returns. When we get down something like another 4 or 5 fathoms we shall begin to drive out, and if we meet with a bunch of ore we shall certainly be able to increase the returns. We have spent a large sum of money in the last four or five years in that part of the mine. Another part of the mine that we allude to is near the large cross-course, where the big discoveries took place years ago. Capt. Richards touches upon that in his report, and he will be able to tell you more about what we are doing in that part of the mine. If we discover anything near where Wheal Maria made its enormous discovery 40 years ago, it would throw a new light entirely on our property. Then, with regards to tin, Capt. Richards has brought up some stones from the bottom of the mine, which you see here, showing the rich character of the lode, and the gradual change from copper to tin. Dolcoath itself changed from copper to tin in the same way. The copper wore out and the mine became poor, and was many times on the point of being abandoned. They worked on, making calls year after year, and I remember the time when the shares were almost given away. They still persevered, and in the result they have one of the richest tin mines ever discovered in Cornwall. Their richest lode is at something like twice the depth that we have reached at the present time in Devon Consols; so that I hope there is not only a great future for us in opening out, as I hope we shall do, copper ore and mundic, but that there is also a great future for us in connection with the finding of tin. I say those stones of tin are as fine as any to be found in Dolcoath, or in any other mine at the present time. (Cheers).

Mr. Mitchell: What shaft are they from?—The Chairman: From near the Railway shaft, where we propose to sink. It would be cowardice if we did not sink this shaft, and try what is underneath us there. (Hear, hear.) The indications are such that I say it is our duty to work manfully and sink the shaft. (Cheers.) In August last the directors foresaw that the time was coming when the coal miners would, in all probability, press for higher wages, and we entered into a contract for 3000 tons of coal at a very reasonable price; and I do not believe if we had to buy the coals now we could not get them at the price agreed upon within some shillings a ton, while we have no strike clause in the contract. (Cheers.) The Chairman having referred to the general depression in the country, especially in connection with the metal industries, invited comment and enquired, and then moved the adoption of the report and accounts.

The Right Hon. Lord Claud Hamilton seconded the motion.

Mr. Mitchell: Will you sink the Railway shaft with the boring machine or by hand-labour?—The Chairman: I think it would be very desirable that we should use boring machinery. We have been discussing the matter this morning, but we have not yet decided.

Mr. Moses Bawden (the purser) pointed out that the question of employing boring machinery depended on the water-power. If they sank this shaft by machinery they would have to take it away from some other point. As they got back to the cross-course he believed they would reach other lodes which were not worked on in former years because the rich lodes gave them all the ore they wanted. They would now look after other lodes so as to keep up the returns.

Mr. Hornecastle asked how many pounds of black tin per ton of ore would pay?—Mr. Bawden said a produce of 30 lbs. to the ton would yield a profit. Some of the stones raised were worth from 9 to 10 cwts. to the ton, or 50 per cent. of tin, but they could not calculate on having much ore of so rich a quality. By sinking deeper he thought that the copper would wear out entirely, and that tin would take its place. At present they had on the mine a few tons of tin which had been picked out from time to time.

Capt. Richards added that the indications were very good indeed, and his firm impression was that by sinking deeper they would get into the tin ground. He had no doubt indeed that that would be the case. As to Watson's shaft, there was certainly a great improvement in that shaft. The lode was now 4 ft. wide and of very good character. He also believed that they would have several productive lodes as they approached the great cross-course. If this should prove to be the case they would have an unexplored area of 300 fms. to work upon west of the cross-course; so that south and west the prospects were very encouraging indeed. (Hear, hear.)

Mr. Hornecastle asked what would be the cost of sinking the Railway shaft?—Capt. Richards replied that the sinking was let to six men at 18*l.* per fathom. At Watson's shaft, where the ground was harder, they were paying 26*l.* a fathom.

Mr. Mitchell said the costs would not be materially increased, and he thought they should by all means try to sink the shaft as rapidly as possible. (Hear, hear.)

Mr. Bawden remarked that with a better price for their produce they would be able to meet the extra cost and show a profit.

Mr. Hornecastle pointed out that they had only six months' returns against seven months' costs, but the balance of profit was a little better than at the corresponding period of last year.

The Chairman: In the interval we have sunk shafts and developed the mine vigorously, besides paying for the stock of coal, timber, and so on, that we have in hand.

Mr. Bawden: If we had had in the past half-year the price that we had six months ago we should have made 2000*l.* more than we have.

Mr. Mitchell: I do not think that that is at all a bad state of things under all the circumstances. (Hear, hear.)

The Chairman: I might add that we have sold 10,000 tons of copper ore in the year, and have only decreased our reserves by 3000 tons.

The report and accounts were then unanimously adopted.

Mr. Hornecastle proposed a vote of thanks to the Chairman, directors, and officers of the company.

A Shareholder, in seconding the proposition, expressed the confidence of the proprietors in the direction and management of the company.

The proposition having been adopted, the Chairman, Mr. Bawden, and Capt. Richards acknowledged the compliment.

The meeting was then brought to a close.

DEVON GREAT UNITED COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, Austin Friars, on Wednesday,

The Right Hon. Lord Claud Hamilton in the chair.

Mr. W. H. Allen (the secretary) read the notice convening the meeting, and the reports and statement of accounts were taken as read.

The Chairman said he did not mean to trouble the shareholders with many observations, as the shareholders were in the report made fully acquainted with the position of their affairs. At the last meeting the report expressed regret that the directors could not give the shareholders a more cheerful account of the operations at the mine, and that no very important discoveries of mineral had been made, but he (the Chairman) ventured at that time to state that nothing had occurred since the preceding meeting to at all diminish his confidence in the ultimate success of the mine, and that nothing had transpired to lessen the value of the property in the minds of those who had known the neighbourhood for years, nor in the minds of experts who were thoroughly acquainted with mining operations in the district. He was happy to say that to a certain and encouraging extent that hope had been realised. No doubt all the shareholders had received the circular sent out by the directors, saying that the lode in the 120, west of Willesford's shaft, had gradually improved, and was valued at 4 tons of copper ore, worth about 4*l.* per ton to the fathom, and that the 120 east had further improved, the lode being worth 2½ tons of copper ore, worth 4*l.* per ton to the fathom. Subsequent operations both east and west at the 120 had been of the same satisfactory character, and the lode, though not quite so good as he had just stated, was still of a most favourable character. As had been said in the report, "Looking at the discovery of copper ore made in the 120 west we at once turned our attention to the 104, which had been driven 16½ fms. west of Willesford's shaft, and suspended on account of its extreme poverty." Their attention having been directed to the most satisfactory results in the 120 they were now driving the 104, but they had not yet reached the continuation of the discovery made in the 120, but it was expected that in about 6 fathoms more driving they would reach the deposit, and they would then be able to sink down through it to the 120, and the indications were such as to warrant the expectation of favourable results. The state of their affairs was somewhat in this way. They had been working east and west at the 120, and these points were looking most favourably. Since the discovery announced in the circular they had raised about 26 tons of ore. Then the lode in the 104, which was then of poor value, had considerably improved, and they were now laying open ground which would be taken away at a profit to the company. They had about 40 tons of ore ready for the market, worth about 100*l.*, of which 85*l.* worth came from the workings east and west at the 120. In all these operations they had, he was happy to say, continued to follow out the original intentions of those gentlemen who managed the affairs, and those views and intentions were entirely approved of by Capt. Charles Thomas, an expert of noted repute, who had inspected and reported upon the mine. (Hear, hear.) It was of course satisfactory to find independent testimony of so high a character as Capt. Thomas's confirming the statements of those who were responsible for the management of the mine. The Chairman then moved the adoption of the report and accounts.

Mr. Peter Watson seconded the motion, and in doing so said it was very satisfactory to find that the object with which the company was started—that of sinking below the 104—had been carried on so successfully. They had at first had the dark killas, which was not productive of copper ore or mundic, but the strata had now changed, and they were now in a beautiful light killas, which was at all times congenial for the production of copper ore. The directors were at the mine at the time the improvement was taking place, and they saw it for themselves. The indications were certainly very encouraging indeed. (Cheers.)

Mr. Greer: What is being done as to the large amount of unpaid calls?—Mr. Watson: A great deal of it has already come in, and amounts are coming in daily.

Mr. Moses Bawden remarked that at the last meeting he did not hesitate to say that he was disappointed at the results of what they had done, but since that they had taken out about 85*l.* worth of ore, without any stopping, but simply in the driving. At that time the 104 having proved disappointing had been discontinued, but owing to the discovery in the 120 they had been obliged for the purpose of ventilation to drive the 104, and the lode in that level was worth from 3 to 4 tons to the fathom, and it was clear that the ore discovered in the 120 was going up into the 104. He believed they were in a good course of ore, and the probability was that by sinking the shaft they would within another 10 fathoms get into a deposit of ore similar in character to the stones which were on the table. (Cheers.)

Mr. Bentley: What is the value per ton of that ore?—Mr. Bawden: The ore we have taken out of the levels will average about 3*l.* per ton. He added some of it was worth over 7*l.* per ton, but the average was about 3*l.* per ton.

Mr. H. Wilson said he also had been disappointed with the progress made, and, believing that some of those engaged in the management had old-world ideas, and that, indeed, things were not being pushed on as they might be, he had visited the mine and spent some time underground. The result of his investigation was to convince him that the property was being developed in a miner-like and masterly manner. (Hear, hear.) Everything was being done in the most efficient manner possible, and the position of the property was such as to justify the shareholders in clinging to their shares, and to regard the company rather as an investment than a speculation. (Hear, hear.)

The Chairman, in reply to a remark, said the directors were taking no fees. (Cheers.)

Capt Richards said he had great confidence in the property when it started, but his confidence was now greater than ever. The 104 gave evidence of further improvement, and the lode there was of greater value than the lode at the 120 when Mr. Wilson visited the mine.

The report and accounts were then unanimously adopted.

A vote of thanks was passed to the Chairman and directors, and the Chairman having acknowledged the compliment, the meeting broke up.

KIT HILL GREAT CONSOLS COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, Austin Friars, on Wednesday,

The Right Hon. Lord Claud Hamilton in the chair.

Mr. W. H. Allen (the secretary) read the notice convening the meeting, and the report and accounts were taken as read.

The Chairman said the object of their meeting was to give the shareholders an account of the operations in progress, and the course of those operations since the last meeting. Those operations, as would be seen from the reports, had been the driving of the great tunnel and the sinking of the shaft to meet it. The tunnel had been driven a further 60 fms. south at the date of the report, since which time a further 6 fms. had been driven. The engine-shaft had now been sunk more than a third of the whole distance, and long before the whole of the distance could be sunk it was hoped that they would be able to effect a junction with the tunnel, as they only had 22 fms. to sink to accomplish that object. The shareholders were all aware that the undertaking was a very arduous one, as the working was mainly in hard granite. They had attacked one of the largest hills in Cornwall, and the driving of the tunnel exceeded any operation of the kind in Cornwall. They had met with granite of extreme density which had somewhat interfered with their operations; but he was happy to say that they had now got into granite of an easier character, which enabled them to get through about 14 ft., or nearly 2 fms. a week. This was a very satisfactory rate of progress as compared with the more arduous work they had previously had to do. They had come upon a lode which was of a very promising character; but their object was not to tarry by the way, but to push steadily forward with the great object they had in view, the accomplishment of which required both money and patience. The operations had so far been carried on with great success; the machinery had been working exceptionally well, and some of the most experienced men in the country had expressed themselves in satisfactory terms as to the way in which the operations were being carried on. Their operations had been concentrated on the driving of the tunnel and the sinking of the shaft; and, in consequence, they had not, as they might have done, employed men to take out the tinstuff met with, and of which there was undoubtedly a large amount in the mine. This brought him to a question which was mentioned to the shareholders a year ago—the important question of purchasing steam machinery for the purpose of making marketable the ores met with in their operations. The value of returning tinstuff to the market in as large a quantity as possible must be obvious to the shareholders, to everyone. There was a property situated within half-a-mile of Kit Hill which offered an admirable means of converting their tinstuff into marketable produce, and the question arose whether they should undertake the purchase of that property at once, and deal with the tinstuff met with in their mine. This property, East Kit Hill, was bought by Mr. Peter Watson at a time when mining was in a more flourishing condition than at the present time, to prevent other people setting up works in their immediate neighbourhood. Mr. Watson had offered to let the company have this property for exactly the same price which he paid for it, and at the request of the board he had conveyed his offer in a letter (which was read). The East Kit Hill was in the vicinity of their own sett, and considering that it had stamps and appliances, he and his colleagues considered Mr. Watson's offer a very valuable one; and, after mature consideration, they had decided to recommend the shareholders to sanction the purchase of the property on the easy terms named by Mr. Watson. (Hear, hear.) With regard to the calls in arrear, since the accounts were made up 180*l.* had been received, and the balance would be pressed for by the solicitors of the company. After the last meeting the directors endeavoured to obtain contracts for the sinking of the shaft and driving the tunnel by contract; but in this they had not been successful. The machinery was going on exceedingly well, and was progressing with as good results as they could possibly expect. He moved the adoption of the report and accounts.

Mr. Peter Watson, in seconding the motion, remarked that the tunnel they were driving was not a mere adit level, but a gigantic operation of a character unknown in Cornwall. The directors had advertised with the view of seeing whether they could get the work done more expeditiously than they were doing; but their efforts had been unavailing. On the two important points to which the Chairman had referred the future success of the company rested, and he was very glad that those points were being prosecuted with such vigour. With reference to the East Kit Hill property, he had agreed to accept 1520*l.*, which was about the sum he had paid for it, payable at the rate of 60*l.* a month. He held 2300 or 2400 shares, and it was, therefore, his interest to do the best he could for the company, and, seeing that they must spend 3000*l.* or 4000*l.* if they put new machinery and stamps up anywhere else, he had made the offer which the Chairman had read. The payments would extend over a period of two years, and would hardly be felt. They had on the table some stones of tin from the bottom of the 85. The lode there was yielding very well, and he hoped the returns would soon become satisfactory. It was to be remembered that the East Kit Hill property was a large sett, and that any improvement at Kit Kill would materially increase its value, that was if the company wanted to sell it again. From Kit Hill to the proposed stamping and dressing-floors they have a good road down hill, so that the expense of carrying the ore for treatment would be very small. With regard to the Kit Hill property, he had greater faith in it now than he had had at any time. (Hear, hear.)

A Shareholder asked whether there was any stuff to send to the stamps?

Capt. Richards replied that there was, but they could not, of course, keep all the stamps regularly working to begin with. Judging from the indications, however, he believed that they would soon be able to make large returns, and he thought they now had an opportunity of getting the necessary stamps on very easy terms.

Mr. Brown thought the question of the purchase of East Kit Hill should not be decided upon hastily. There had recently been a sale of machinery at South Kit Hill, which was not more than a third of the distance from Kit Hill as the property which it was proposed to buy. South Kit Hill had only recently stopped, while East Kit Hill had been suspended for years, and the stamps and other machinery there would require repairing and putting in order, whereas South Kit Hill could have been purchased almost as a going concern. It was true that the 1520*l.* referred to included the whole of the East Kit Hill sett; but the parent company had more than enough ground to last the lifetime of any of the present shareholders. He suggested that the ore should either be sent away for treatment, or that they should erect stamps and dressing-floors on their own property on the top of the hill.

Mr. Watson replied that his desire was to have the work done as cheaply as possible, and, therefore, he had made the offer which had given rise to Mr. Brown's remarks. The directors had tried to get the stamps from South Kit Hill, but they had been unable to do so. As to the distance to East Kit Hill it must be remembered that that property joined the Kit Hill Mine, and that as the road would be all the way down hill to the stamps the expense of cartage would be very small indeed. As to erecting stamps at the top of Kit Hill it would be useless, and for the present to put them at the mouth of the tunnel, while it would be absurd to put them on the top of the hill, for the engine would have quite enough to do in drawing and pumping. Besides, where was the water to come from for dressing the ore? It was to be remembered that any improvement at Kit Hill would materially improve the value of the East Kit Hill sett. (Hear, hear.)

Mr. Stewart suggested that the shareholders had better leave the matter in the hands of the directors.

Mr. Brown (who it appeared, as was stated at the meeting, held only ten shares), in the course of a further discussion in a series of speeches, tried to enforce his point that the purchase of East Kit Hill would be an undesirable one for the company, but Capt. Richards and Mr. Bawden pointed out the advantages of the purchase, and referred to the impracticability of carrying out Mr. Brown's suggestion as to the erection of stamps at the top of the hill, and except at the mouth of the tunnel, and to do the latter at present would be inadvisable.

The report and accounts were adopted.

Mr. Button Browning then proposed the acceptance of Mr. Watson's offer with regard to East Kit Hill machinery and stamps.—Mr. Stewart seconded the proposition, which was carried with one dissentient, after an amendment proposing that an extraordinary meeting should be called to consider the question had been negatived.

The auditors fees were voted at ten guineas, and the meeting then closed with the usual compliments.

SOUTH PENSTRUTHAL MINING COMPANY.

A general meeting of shareholders was held at the offices of the company, Drapers' Gardens, on Wednesday,

Mr. James Walton in the chair.

Mr. E. Ashmead (the secretary) read the notice convening the meeting, and the minutes of the previous meeting were read and confirmed.

The Secretary read the statement of accounts. The eleventh call of 5s. per share on June 26 amounted to 1355*l.* 15s., sundries bringing up the total to 1366*l.* 7s. 6d. As to expenditure, the balance from last account amounted to 1041*l.* 15s. 4d.; the labour cost for five months, 1006*l.* 15s. 9d.; merchants' bills, 750*l.* 13s. 11d., making a total of 1757*l.* 9s. 8d.; boring machinery taken over by the company at the conclusion of the contract, per valuation, 342*l.* 7s. 7d.; interest on overdraft, 51*l.* 7s. 3d.; legal expenses, 2*l.* 4s. 6d.; making a total, including the balance against the mine, of 3195*l.* 4s. 4d. The liabilities were—Williams, Williams, and Grylls, 1933*l.* 1s. 9d.; merchants' bills, 1040*l.* 6s. 2d.; J. Hosking, for boring machinery, 138*l.* 7s. 7d.; total liabilities, 3111*l.* 15s. 6d. The assets were—Glyn, Mills, and Co., 127*l.* 1s. 8d.; calls in arrear, 678*l.* 2s.; and due upon forfeited shares, 477*l.* 15s.; total, 1282*l.* 15s. 8d. Balance of liabilities over assets, 1829*l.* 16s. 10d.

The Chairman said that at the last meeting the captain of the mine thought that at the 150 fm. level they would meet with something, and they took the opinion of the meeting as to whether they should sell the forfeited shares; but the opinion of the meeting was that their prospects were such as would not justify them in selling at that time, and they decided unanimously to hold on. Had they known what the result would have been they would have sold.

Capt. Davey, in reply to a Shareholder, said that they were paying 16s. a ton for coal delivered at the mine.

The Secretary read the report of Capt. Davey (the agent at the mine) as follows:—

Nov. 26.—Since the last general meeting we have fixed plunger-lift at the 100 fathom level in Walton's engine-shaft, with rods, stays, footway, and other requirements for the future development of the mine. The engine-shaft is sunk

8 fathoms below the 100 fathom level, and we expect to get to the 110 in another eight or ten weeks, when from this point the western part of the mine can be prosecuted, and communication made with Simmons' shaft, which is sunk to the 110, where it is said by the old workers that the lode is 10 ft. wide, and bearing rich yellow copper ore; the ground in this part of the mine is easy for development. The flat-rod shaft has been sunk to the 150, a cross-cut driven north into the lode, which we found to be 10 ft. wide, composed of quartz, fluor-spar, capel, mundic, and good stones of yellow copper. The 150 west end is driven west of cross-cut 7 fathoms; lode carried 6 ft., but where cut through, just behind the end is 10 ft. wide, composed of quartz, fluor-spar, mundic, and yellow copper intermixed; a very fine looking lode. The same remark will apply to the 150 east end, which is driven 4¼ fathoms. The flat-rod shaft is sunk below the 150 fathom level 2 fathoms, and is being sunk by boring machinery, where we calculate to sink 3 fathoms per month, and reach the 160 in about three months. The contractor has made a good start, and if he fails to sink the 3 fathoms per month the contract can be withdrawn at any time. The ground in both the engine and flat-rod shafts is of a good matrix, and judging from the character and composition of the lode we are now laying open at the 150 we have every reason to expect a bunch of copper at the next level, which is not only the opinion of your agent, but of independent managers who have inspected the mine.—STEPHEN DAVEY.

He also read the report of Capt. W. C. Trevena, as follows:—

Nov. 23.—In compliance with your request, I yesterday inspected the South Penstruthal Mine, and the following is my report thereon. Walton's engine-shaft is sunk 8 fms. below the 100, and sinking, by nine men, at 27*l.* per fathom in a very pretty looking granite. It is, I believe, intended to make this lift 12 fms. before the lode is again seen, which I would certainly recommend, seeing the fine lode there is in the 100. The composition of the lode is different although worthless, not so much sulphuric mundic but more chlorite and quartz intermixed with capels, and impregnated with copper ore than seen in the upper levels, evidently it is changing, and augurs well for mineral in depth. The Flat-rod shaft is sinking, by 12 men, and two machines, at 40*l.* per fathom. This is about 2 fms. below the 150, and should be forced on with all speed for another level, as the future of the mine depends in a great measure on the progress made here. It is only depth required, in my opinion, when the lode will be found as productive as it was in the first working. Where driving west in the 150 the lode is very large, and everything about it congenial for mineral, which inspires all miners that have seen it with confidence in the future of the property in depth. With reference to driving the 130 and 150 towards the engine-shaft I would only drive the present level—the 150. This will be under the engine-shaft by the time that shaft reaches that depth, and give a thorough ventilation. When this is accomplished the Flat-rod shaft, I believe (if it is kept sinking), will be down on a deposit of mineral that will pay for all your outlay. I would not incur any cost in exploring the shallow levels west as I have no opinion there will be anything found by doing so. You ought to know our district thoroughly by this time, and are aware that all our rich copper mines failed to produce any paying quantities below the 70 or 80, and until they were sunk through an unproductive stratum some 70 or 80 fms. the lode was comparatively poor, then they began to improve, and made some of our richest mines. I look upon the Penstruthal Mines as undergoing a similar change, and shall be greatly deceived if my anticipations are not realised. As regards the working cost, I find it to be about 35*l.* per month, and cannot see where it can be reduced, if you wish to develope the mine as they are now doing, and may further say that I quite approve of the manner in which the mine is being worked, and cannot suggest anything different than they are now carrying on. —W. C. TREVENA.

Mr. HAMILTON said that he was on the ground some time, and it struck him that the stuff that was brought up was all alike, and there did not seem to be any change in the driving of the ends. He thought it would be a pity to expend money in exploring levels when they were sinking a shaft, particularly when the ground was all the same.

Capt. DAVEY said that he would advise them to drive the 150 for some time yet; they would be the most fortunate people in the world if they found a bunch of ore, exactly at the point of the intersection of the lode.

A SHAREHOLDER said that Capt. Davey at the last meeting said that he had worked down by the side of the lode, and that he had only to prick it to strike the ore. At that time they were told they were on the edge of the lode.

Capt. DAVEY said—No; it was not said we were on the edge of the lode, but close to the lode, within 6 or 8 ft.

A SHAREHOLDER said it appeared to him that they must go down deeper in the flat-rod shaft, and then if they cut the lode all well and good; but if not he did not see any good in going on like that.

The CHAIRMAN said that the committee were of opinion that they should suspend driving as much as possible; but they desired to continue the sinking of both shafts.——The report and accounts were then adopted.

The CHAIRMAN moved that a call of 6s. per share be and is hereby made, payable at Glyn, Mills, and Co. on or before Dec. 12.——This resolution was adopted.

The CHAIRMAN said they were doing all they could to reduce the expenditure.

A vote of thanks to the Chairman and committee closed the proceedings.

NORTH PENSTRUTHAL MINING COMPANY.

A general meeting of shareholders was held at the offices of the company, Drapers' Gardens, on Wednesday,

Mr. JAMES PETRIE in the chair.

Mr. E. ASHMEAD (the secretary) read the notice calling the meeting, and the minutes of the previous meeting, which were confirmed.

The statement of accounts for the five months ending Oct. 6, 1883, showed that the twelfth call on July 26 last produced 1175*l.*, which by sundries was brought up to a total of 1229*l.* 10s. 10d. On the other side the balance from last account was 730*l.* 3s. 2d.; the labour cost for five months, 848*l.* 6s. 4d.; merchants' bills, 460*l.* 17s. 5d., giving a total of 1309*l.* 3s. 9d.; miscellaneous items came to 48*l.* 13s. 1d., giving a grand total of 2088*l.* The liabilities were as follows:—Due to Williams, Williams, and Grylls, 1515*l.* 17s. 1d.; merchants' bills, 322*l.* 6s. 1d.; lord's dues, 12*l.* 8s. 10d.; call overpaid, 6*l.* 5s.; total, 1856*l.* 17s. Assets: Alliance Bank, 184*l.* 3s. 1d.; calls in arrear, 74*l.* 13s.; bills receivable, 126*l.* 10s.; calls on forfeited shares (doubtful), 22*l.*; sundries, 4*l.* 1s. 9d., making a total of 995*l.* 7s. 10d.; balance of liabilities over assets, 858*l.* 9s. 2d.

The SECRETARY read the report, as follows:—

Nov. 26.—Since the last general meeting Highburrow shaft has been sunk 2 fms. below the 150 fm. level, where a branch came in from the south bearing rich stones of tin, and will in a few fathoms form a junction with the Highburrow lode. The granite in the bottom is of a friable nature, lodge plat cut, also cistern plat, bearer hitches, and bearers and cistern put in, plunger bottom fixed, main rods brought down from the 108 to the 150, but not yet connected. This work is being hastened on as fast as possible, and we hope to complete it in about the time before specified. The 150 is driven east 6 fms.; lode about 5 ft. wide, and worth for tin 6*l.* to 7*l.* per fathom. The 150 is driven west 12¼ fms.; lode 2 ft. wide, composed of quartz, capels, and chlorite, producing occasional stones of tin. The lode in the end has been discovered by small crossing for the last 8 or 10 ft. driving, but is becoming more settled as we advance, and will be pushed on with as little delay as possible to reach the tin ground gone down in the bottom of the level above. The 132 is driven west of shaft 46 fms.; lode 3 ft. wide, composed of capels, quartz, and prian, producing a little tin. The tin ground passed through and spoken of in our report of the last general meeting is still standing whole in the bottom. The lode in the winze sinking below the 120 is 2 ft. wide, producing occasional stones of tin. The 58 cross-cut is driven north 90 fms.; the end is again in elvan, which will probably lengthen the distance to reach the lode several fathoms. The ground in the balance-bob plat has been harder than we calculated it would have been, but we expect to get ready in a week from this time for the reception of the bob, when within a fortnight we shall be ready to start the Highburrow shaft to sink to the 160. The granite in the bottom of the mine is very congenial for the production of mineral, and seeing that the lode at the 150 has been more productive than either of the several levels below the 70, we are of opinion that we are just now entering the mineral bearing strata, which is also the opinion of the inspector who has been here.—STEPHEN DAVEY, WM. POLKINGHORNE.

The CHAIRMAN moved that the accounts and the report be received and adopted, and in doing so said at their last general meeting, on July 26 last, they were able to report that the Highburrow lode had been struck at the 150 fm. level and cut into for about 6 ft., and by assay worth 28 lbs. of tin to the ton of stuff for the width gone through. Some three or four weeks later when the level had been extended 3 fms. west, and 1½ fm. east, one of their shareholders engaged Capt. Trevena, of Wheal Basset, to inspect and report upon the mine, thus obtaining a disinterested and reliable opinion. An extract from that report, which was dated Aug. 22, read as follows:—"I like the appearance of the lode very much. There is a marked contrast to anything seen in the upper levels, the component parts of the lode are chloride, flookan, and tin capels, which are well known in this district to be congenial for the production of large quantities of tin. There is another feature in connection with the bottom of this mine which enhances the value of its improved prospects. This is an elvan course about 2 fms. wide now in conjunction with the lode, and together they are letting water more freely than seen in any other part of the mine, which is evidence to me there is a great change taking place in depth, and should recommend shaft to be continued to another level, where I have no doubt the shareholders would meet with their reward." By this the committee understood that should the next level (165) prove to be as it was almost certain it would be then a very few months' working would place them in a position to make material returns of tin to set against costs. He found in Cornwall amongst practical miners a strong opinion that where there was a good outcrop of tin above the elvans there was a better crop below them. This mine possessed that favourable feature. The company previously working it was on the Limited Liability principle, the late Mr. John Little, who knew the district well, being one of its active promoters. Tin in quantity was met with near the surface in the Highburrow lode, a powerful stamp engine, and 33 heads of stamps were at once erected, and about 20,000*l.* worth of tin returned from the first 50 or 60 fms. in depth. Below that was some copper, but the next 50 or 60 fms. was barren of mineral. If the reports and opinions of such men as Captain Josiah Thomas of Polcrath, Captain Trevena of Wheal Basset, and their own experienced captain were to guide them they appeared now to have got through, or nearly through, the barren ground on the top of another crop of tin. That was very reassuring. It would be needful to bring under their notice that day a matter which might give the committee a little trouble unless the shareholders acted upon the good old Cornish motto "One and All." Owing to circumstances entirely foreign to the position and prospects of the mine a considerable number of shares had been most reluctantly relinquished. These shares it was proposed to offer first to existing shareholders free of cost, but subject to the payment of the call that would be made that day, and, of course, to subsequent calls so long as the shares were held. If they entertained for a moment, to his mind, the incredible supposition that the confident predictions of those practical miners might be utterly falsified, and there should not be a particle of mineral in the 165, they knew that they need not venture more than 9s. or 10s. per share on the shares they might now accept; that was the call of 5s. to be made that day and another four months hence of 4s. or 4s. 6d. Before it became needful to take a third call into consideration the 165 they had no reason to doubt would be cut and proved to some extent. On the other hand should the 165 cut well the shares would have a bound, and all so disposed might take their profit. They did not forget that the former company on the Limited Liability principle and the company on the Cost-book plan had together expended 50,000*l.* to 60,000*l.* upon the plant and its workings. Personally he meant to avail himself of the advantage of that large outlay so far as his quota of those shares would give it him, and he knew there were others of the same mind. He moved the adoption of the report.——Mr. LABY seconded the resolution, which was agreed to.

The SECRETARY said that the relinquished shares numbered 1295.

The CHAIRMAN said that, with Capt. Davey's favourable report of July last before them, subsequently confirmed by Capt. Trevena, the committee had no hesitation in instructing Capt. Davey to prepare for sinking to deeper levels. This work, as they had heard, was progressing, and would soon be completed. A careful estimate of the cost showed that 1s. 6d. per share on the whole number of shares would cover it, not a large outlay; but he trusted it would be cheerfully contributed—say, an extra 1s. now and, if need be, 6d. at the next meeting. He moved that a call of 5s. per share be made, payable on or before Dec. 12.——Mr. ARTHUR seconded the motion, and it was agreed to.

A resolution was passed empowering the committee to dispose of the relinquished shares as they thought desirable.

A vote of thanks to the Chairman and committee closed the proceedings.

CATHEDRAL CONSOLS MINING COMPANY.

A general meeting of shareholders was held at the offices of the company, Drapers' Gardens, on Wednesday,

Mr. JAMES LABY in the chair.

Mr. EDWARD ASHMEAD (the secretary) read the notice convening the meeting, and the minutes of the previous meeting were read and confirmed. He also read the balance-sheet, which showed that the cost of working the mine for five months amounted to 1172*l.* 9s. 1d. The eighth call of 2s. 6d. per share on July 26 last brought in 750*l.*, and "sundries" brought that amount up to 771*l.* 2s. 2d. The assets were put down at 418*l.* 17s. 2d., including calls unpaid 358*l.* 5s. The liabilities amounted to 1589*l.*, leaving a balance against the mine of 1170*l.* 3s. 3d. He also read the report as follows:—

Nov. 26.—Engine-Shaft: This shaft is sunk 8½ fms. below the 74; lode 2 ft. wide, composed of fluorspar, quartz, chloride, and a little copper ore. The lode here is somewhat unsettled from the influence of the cross-course which came into the shaft some 8 ft. above the bottom, where we found some good stones of tin. The 74 is driven east 21 fms. 3 ft.; lode 2½ ft. wide, composed of fluorspar, quartz, and chloride—a very promising looking lode. This end is within 3 or 4 fms. of the copper gone down in the bottom of the 60. The 60 is driven east 53 fms.; lode 2½ ft. wide, composed of quartz and prian, with a low percentage of tin. This level has been suspended in consequence of the soft nature of the ground, and the men remove to the 50, which is driven east of shaft 51 fms.; lode 3 ft. wide, composed of quartz and prian, yielding a little tin. The lode in the winze sinking below the 60 east is 2 ft. wide, producing occasional stones of copper. The lode in the winze sinking below the 50 east is 2 ft. wide, composed principally of quartz and fluorspar—at present of no value. Since the last meeting good progress has been made in the development of the mine. Ground driven and sunk 60 fms., most of which has yielded mineral of low percentage. We have carefully surveyed the surface and laid down the different shafts, also the lode on the old lode at Lawry's, connecting them with our engine-shaft lode, and from the underlie of the old lode at the 10 we shall have about 24 fms. to drive south from the 84 to cut the old mine lode, which was the great object of the former company, who failed to reach it, and also spoken so highly of by the late Capt. Josiah Jennings and the present Capt. Thos. Mitchell, of Wales. In about six weeks from the present we calculate to reach the 84, where a cross-cut can be driven without fear of any encumbrance from the old mine or its water.—STEPHEN DAVEY, STEPHEN DAVEY, jun.

The CHAIRMAN read a letter from Capt. T. Mitchell with regard to the mine, as follows:—

Nov. 1.—I enclose you a rough sketch of the Cathedral old mine. You will observe I have only sketched the bottom levels, 60 and 70. By showing the upper levels it would be of no advantage to you. The old engine-shaft was sunk perpendicular to the 60 between the lodes, as shown in the plan, and cross-cuts were driven out north and south intersecting said lodes. The south lode at the 60 was opened upon about 15 or 20 fms. east, and a similar distance west of cross-cut, and a sump winze sunk to the 70 on a very strong lode. The 70 was also driven on about 20 fms., where it presented a strong appearance, a fine looking lode from 10 to 12 ft. wide. The sump winze here referred to was sunk by aid of pumps worked by horizontal rods conveyed through the level. The two lodes at the 60, north of old engine-shaft, as shown in the sketch. The first lode intersected was only driven upon a few fathoms west of cross-cut. This lode was about 18 in. wide here, and produced some rich stones of grey copper ore. The north lode was driven west about 15 fms. A winze also sunk to the 70, and a few fathoms driven west of said winze. This lode averaged about 2 ft. wide, and it produced some yellow and grey copper ore of rich quality. A few tons of rich ore was got from this place, and the lode presented a very promising appearance. The water was kept out of this winze by hand tackle and barrels going night and day. The lodes in the old mine very much improved in appearance as depth was attained, and no doubt at greater depth they would become very productive. Another level was driven east of the old shaft at the 60, and then extended north, but the ground in that direction being heavy and troublesome, and having crushed together on several occasions it had to be closed up and abandoned. The ground was heavy and troublesome in different parts of the old mine, and no doubt the old workings and levels are pretty much gone together. I would not recommend anyone to meddle with the old mine above the 60, but as I presume your present seat of operations are only a short distance from the old mine I should say it would be a good plan to drive out your bottom levels by-and-bye, and get under the present bottom of the old mine, you would then reach the points and depths so long aimed at by the former company. I do not know the exact position of your present engine-shaft in connection with the north lodes in the old mine, but I have an idea that if you should happen to be working on the first lode indicated in the sketch the north lode may possibly be standing in whole ground to the north of your shaft. The north lode in the old mine was by far the best looking lode of the two. Lawry's shaft was sunk to the 10 under adit, and in a few fathoms from bottom of shaft a flat or underlie winze was sunk to the 20 communicating with a level from the old engine-shaft. Some rich patches of tin had been raised from about this place. Although the distances are roughly laid down I think they will be found very near the mark.—T. MITCHELL.

Continuing the Chairman said that that letter was very favourable. He had, however, been in hopes that they would have had a return of tin before this. They had some stuff at the mouth of the shaft, but in the dry season they had not water-power enough to work the stamps with. During this time of the year, however, having plenty of water, they would get to work, and they hoped within the next four months to produce a considerable amount of tin towards paying the costs. He proposed that the accounts and report be received and adopted, and printed and circulated amongst the shareholders.——Mr. WALTON seconded the motion, and it was agreed to.

The CHAIRMAN moved—"That a call of 3s. per share be and is hereby made, payable on or before Dec. 12, at Messrs. Glyn, Mills, and Co." He did not think they could do with less now, but next time they hoped if there were good returns of tin made that they would do with a considerably less call.—Mr. WALTON seconded the motion, and it was carried.

A vote of thanks to the Chairman closed the proceedings.

ECTON MINING COMPANY.

The statutory general meeting of shareholders was held at St. Michael's Hall, Lombard-street, on Wednesday.

Mr. JUDD, C.E., was appointed Chairman on the motion of Mr. Ross.

The notice calling the meeting having been read,

The CHAIRMAN said: Gentlemen, this as you are aware is the statutory meeting, and statutory meetings are sometimes necessarily of a very perfunctory character, from the fact that they are held so shortly after the formation of a company, and I notice that they are sometimes more than merely perfunctory when there is something to hide and nothing to say. But in this case I am happy to say we have nothing to hide and something to say, and I shall trouble you for a short while in saying the little that we have to place before you. First of all I think it would be well to call your attention to the announcement made in our prospectus. We told you that no allotment of shares would be made unless 20,000 were applied for. I am glad to say that the whole of the capital required was more than applied for, and the shares were allotted accordingly. The directors felt it was their duty to allot to as many shareholders as possible, their belief being that the wider the basis of the company the greater would be the interest felt in it, and ultimately the greater returns would follow in consequence of that extended interest. In one or two instances, however, we felt that it would be advisable to reduce the allotment of shares, and I mention this so that it may not be supposed that there was any difficulty in the allotment of the shares. The directors indeed were more than satisfied with the result of the issue. With regard to the property itself, without repeating what was stated in the prospectus, I may say that what commends it to our notice is the fact that it is a home mine—that it is not one of those mines that are far away, where it is almost impossible for people to go and examine the property for themselves. In this instance the directors are most anxious that as many shareholders as can do so will take the opportunity of going and seeing the mines, and I venture to say, however little of an expert you may be, when you see some of the things there they will immediately commend this property to your notice. The past history of the mines is indisputable and somewhat startling. I suppose if we had collected some of the things that could have been said about it, and put them in our prospectus, it would have borne something of a fairy character. I see from the *Mining Journal* of last week that there is some supposition that it has been worked more or less efficiently as long ago as the time of Charles I. But in 1730 it seems certain that positively valuable ore was discovered on the surface of the mines, and from that fact began those mining investigations, which ended ultimately in a lease being granted to the fortunate finders of this soil wealth, and that was worked out with immense advantage to the company for some 25 or 35 years. After a time the working ownership passed to a late Duke of Devonshire, by whom as well as others it was carried on for a long time with very great profit. The records of a part of this time, or some of them at least, are in possession of the company, and all of them are readily accessible and open to the investigation of shareholders. Difficulties, however, arose—disagreeable incidents arose on the part of the old possessors of this property, and gentlemen of business know very well that when difficulties spring up among them they try and smooth down those difficulties, and get over them to their own best advantage. But in the case of the Duke of Devonshire and his indisposition to be worried in these various things, the case was somewhat different, and no doubt after a time the mine was given up, and has remained in the unsatisfactory condition in which it was taken up by Mr. Bowman. Mr. Bowman, who is present to-day, will be able to tell you more than I can about it. For some time he has felt that here was a mine of very great richness, that there was every evidence of its having been only partially worked, and that there was every chance of its being as great a success in the future as in the past, and living close to the place he was able to devote his time to it, and satisfy himself as to the value of the mines in a way that nobody else living away from that part of the country could have done. He has spent years of labour and a considerable amount of money in his researches in the hope not of any immediate reward, but that some day he might be able to hold shares in a company formed to work it as a reward for his labours. However, the past history of the mines, however rich it has been, has very little to do with us at present, although it is very encouraging to know that everything was so interesting and promising in connection with it. Coming to the present and the future, first of all we have made most favourable terms. The terms upon which we have got this thousand acres of rich soil—this wonderful place as we believe it to be—are most favourable in every sense of the word. The dead rent that is paid is merged into a royalty, so that, as a matter of fact, we pay nothing whatever save as the result of the riches that we derive from the mines. A great trouble in many such cases is the water, but I am happy to say that here the water is only found to rise to the extent of a few inches in 24 hours; and the Clayton shaft, which we are devoting ourselves to first, in order to clear the Clayton Mine, will be very easily drained. No difficulty is anticipated in that case at all. Arrangements for this have been already made. An engine and boiler have been ordered, and we hope before Christmas, at all events, to have the first 30 fms. of that cleared. We shall then proceed to the working of the 60 fm. level (which will be seen on the map there), and great results are anticipated from our operations. In the meantime, we thought that it would be advisable to test the ground where the mining experts had advised us to test, and the satisfactory character of the evidence of that is seen before you. [Referring to a piece of copper on the table.] On the north-western part of the great adit, leading to the Clayton shaft, two men were put on first of all, and the promise there was so considerable that we felt it advisable to put on six men, and very shortly there was evidence that they were on the right track—that is, in the Vivian lode; and gentlemen can see for themselves something there which encourages us to persevere in that direction. One or two other tentative efforts have been made by us, and in each case we have every evidence that this mine is incalculably rich, and there is not a single point that we have hitherto touched (and there are four or five places that we have been attacking in these tentative efforts) that has not rewarded us for our trouble and encouraged us to persevere. I am quite in your hands, and I shall be prepared to answer any question that may be put to us. At the same time I think that you should know something of the present condition of things. The directors sent you an assay that we had of the particular specimen which you see before you that you might judge for yourselves. We are in constant communication with Mr. Bowman, who is devoting himself to the work on the mine, so that we know from day to day what is going on and what to do, and the result is that, for example, hearing at a recent board meeting the suggestion made by Mr. Bowman that certain additional hands should be put on in a given direction, we transmitted orders to do so, and this week we hear that favourable results attended their efforts. Having read some extracts from the latest reports received from the mine he concluded by saying: I do not know that at a statutory meeting one has ever had an opportunity of saying so much from personal knowledge and evidence in favour of what must, after all, be a speculation as we have in this particular mine. I can only further say that your directors, taking a large interest in the mine itself, will continue to take and retain that interest in it. Their purpose will only be served by the permanent good to be derived from the prosperity of the mine itself, and will not be obtained by any traffic in shares, or by any means not open to any other member of the company. (Applause.) The statement is made in the prospectus that application will be made to the Committee of the Stock Exchange for a settlement and quotation: That of course will be done. But you are aware that certain preliminaries have to be gone through, and a certain amount of money has to be paid up before it can be done. As soon as that is done your directors will apply to the Stock Exchange for a quotation, by which you may have a ready medium by way of purchasing more or disposing of the shares you already possess. You are aware that at the present time there is a fair demand for shares, and that there is already, in a small way at all events a market for them, so that any gentleman who wishes to test the market will have an opportunity in the usual way of doing so. I will now propose that the proceedings of this meeting be received and circulated amongst the shareholders. I shall be very glad to reply to any enquiries that may be made on the part of shareholders.

Mr. ROSS seconded the motion, and in doing so said he would like to refer to one little point that seemed to be omitted by the Chairman, and that was with regard to the remarkable significance which the specimen of copper on the table had for the shareholders, as showing them the nature of this mine, or, rather, the lodes in the mine, was of a totally different character to anything existing in the United Kingdom. It was a typical deposit, of what he believed they would presently find existed in the mine in gigantic quantities. It was a remarkable geological fact that they never found these smaller pieces without being certain that other and more important deposits were not far off. These lumps were the droppings left by Nature, so to speak, in her great work, and where these small pieces were found other and large deposits were not far off. It was from gigantic deposits such as he referred to that this mine had made its famous history. He had an extract from the Gentleman's Magazine, which was written from actual observation at the moment, which said that the records of the working of this mine by the Duke of Devonshire were extremely interesting, because they went to point to this fact, that although great was the wealth that the Cavendish family had derived from this mine, yet it was the custom of the duke when there was very little employment for labour to employ in the mine, the poorest men in the country to keep them from starvation and from this philanthropic motive he derived a perfectly fabulous income, stated to have been at various times from 10,000*l.* per week down to 20,000*l.* a year. That was an income derived merely from the employment of surplus labour out of a spirit of charity. There were many tons of records which would have to be searched before they got the full history of the mine. One other fact he would maintain with regard to this mine, and it was this—that a well-known engineer, specially employed by the directors before they permitted themselves to be associated with the undertaking—Mr. Sowerby—a gentleman of large experience well acquainted with similar concerns made a report to the directors verbally of a far more rosy character than that which had been written and circulated for the special information of the shareholders. That gentleman told them as an absolute fact that where this peculiar volcanic limestone formation existed that they were certain to have a repetition of precisely the same kind of deposits as were found previously, and inasmuch as they had a large tract of ground unproved, they might look forward to a career of unexampled prosperity. Of course they must all remember that mining was to some extent doubtful and speculative, but he thought they might fairly venture to say this much with regard to this mine, that they had a property that would pay them dividends beyond their imagination—there would be no medium in it. They would have either something enormous or nothing at all.

A SHAREHOLDER thought it would be a good thing to hold a meeting on the mine.

The CHAIRMAN thought so too.

Mr. BOWMAN then explained, by means of a chart of the property, the nature of the present workings and the proposed development.

The CHAIRMAN, in answer to Mr. C. BEAUMONT COTTAM and others, said that the value of the ore from this property was on an average as assayed 33½ per cent., whilst the average of the copper brought to market from other mines was about 5½ per cent.—in other words, showing a difference of about 14*l.* per ton. But supposing the average was only 25 per cent., they would get an average of 12*l.* 10s. a ton. The High Peak Mining Railway was very accessible for bringing their produce to market, being at a distance of only 5 miles over a magnificent road. As to labour there was no scarcity of it, and Mr. Bowman knew not only where to get men, but how to keep good ones when he got them. The 25,000 shares held in reserve would only be allotted by the consent of the shareholders in general meeting specially summoned to consider the point. He need hardly say that it was useless to have money they did not want. If there was any reason for asking for more by-and-bye a meeting of the shareholders would be called for that purpose. Obviously the less capital that was required to work the mine the better for the shareholders generally.——The motion was then put and carried.

Mr. C. BEAUMONT COTTAM in a happy speech proposed a vote of thanks to the Chairman, Mr. Bowman, and the other gentlemen who had worked to bring the mine to its present state of advancement, and expressed his own belief that there was a very promising future before the shareholders.

The CHAIRMAN having replied the proceedings terminated.

COPIAPO MINING COMPANY.

The annual general meeting of shareholders was held at the offices of the company, Dashwood House, on Thursday,

Mr. J. DUNNINGTON FLETCHER (the Chairman) presiding.

Mr. RALPH S. ARCHBOLD (the secretary) read the notice calling the meeting. The report and accounts were taken as read.

The CHAIRMAN said that perhaps it might strike the shareholders that the report was somewhat meagre; but the monthly reports which were sent to the shareholders must necessarily make the annual reports of the directors somewhat meagre, and limit the scope of any remarks which the Chairman had to make. What was left to the general meeting to do was to receive the report and statement of accounts, and if satisfied to adopt them, to sanction the recommendation of any dividend which the directors might bring before their notice, and confirm the declaration of interim dividends which had been paid during the year; and last, but not least, it would give an opportunity to any shareholder to ask for any information upon the accounts, or upon any matter connected with the company. He would point out one or two matters in the report. The directors began their statement by calling attention to the balance available for dividend in the report of last year, and pointed out how it was apportioned; and he wished to point out that there was an available balance after paying three interim dividends. It might appear to some present that the balance last year was much larger than this year. Practically the actual amount of profit was only 400*l.* more last year than this, but there were 7000*l.* from the profits of the previous year which had been locked up in stock and working capital, which was realised by obtaining money through the vendors' shares, and was now employed as part of the working capital. The accounts would show what amount was received by forfeited shares, and they were now employed as working capital of the company. That working capital amounted to 27,000*l.* The profit from landed estates was less this year than last; last year the profit from landed estates was 2728*l.* 18s. 8d., and this year only 134*l.* 4s. 11d. Without going through the whole of the explanations from the manager, he might say that the profits on farming property must always vary. In 1878 and 1879 there were losses in one year of 672*l.*, and in another of 1035*l.* on the estate. He brought that forward to elucidate the fact that on farming property there could be no permanent sum to rely upon in the way of a fixed income. The estate extended over 1200 or 1500 acres, 12 or 15 miles in length, and was now used solely for grazing cattle and making hay, and according to the rain which fell, and upon the cattle which came over the mountain for pasture, depended the profits. There was a siding upon the estate for the neighbouring railway,

and if the war ceased there was no doubt that the income from the estates would increase. There were 200 shares which did not appear in the accounts which might be forfeited at any time by the directors, and afterwards be apportioned as the company might direct. The directors were in no want of money, and no appeal was made to shareholders as to how they should be sold, and what should be done with the money. He might mention that upon one of the mines there were about 27,000 tons of desmontes, the produce of the mine cast aside, which contained an average of 7 per cent. of copper. The new engine had gone out, and also some crushing machinery, in order to enable the directors, at some future time when the price of copper went up, to make these large reserves of desmontes available. He could not give any figure as to the value of these desmontes, but he shadowed this forth as a possible source of profit in time to come. He moved the adoption of the report and accounts.——Mr. Arthur Holland seconded the motion, which was put and carried without any question being asked.

The Chairman: I have to move that a dividend of 7s. 6d. per share be declared, and that the interim dividends paid on March 22 this year of 1s. 6d. per share, on June 22 of 1s. 6d. per share, on Sept. 24 of 1s. 6d. per share, be considered part thereof, and that the balance of 3s. per share be paid on and after Dec. 17.

Mr. F. Harrington seconded the motion, which was put and carried.

The Chairman moved that Mr. Thomas K. Weir be re-elected a director.

Mr. Woods seconded the motion, which was carried.

The Chairman moved that Mr. G. H. Loxdale be re-elected.——Mr. F. Harrington seconded the motion, which was put and carried.

The auditors, Messrs. Cooper Bros. and Co. (chartered accountants), and Mr. W. Fred Moore, were re-elected.

Mr. Weir acknowledged the re-election of himself and colleague, and said it must be satisfactory to the shareholders to meet and declare a 10 per cent. dividend, looking at the present low price of copper.

On the motion of Mr. Woods a hearty vote of thanks was passed to the Chairman and directors, and the meeting broke up.

WEST KITTY MINE COMPANY.

The four-monthly meeting of shareholders was held at the offices of the company, Walbrook, on Tuesday,

Mr. John B. Reynolds in the chair.

Mr. Fredk. J. Harvey (the secretary) read the notice calling the meeting. The statement of accounts (copies of which were distributed in the meeting), showing a balance of cash at the bankers of 3598*l.* 0s. 3d., was taken as read. He (the secretary) added: Gentlemen, these accounts have been audited by one of our largest and most influential shareholders, Mr. Payne, who has very kindly gone through the figures, and certified to their correctness.

Mr. Harvey read the agent's report, as follows:—

Nov. 26.—The cross-cut driving north of engine-shaft, at the 84 fm. level by six men. I expect to intersect the lode in 3 or 4 fms. from the present end. The lode in the 60 driving east is worth 10*l.* per fathom. The lode in the 72 driving east is worth 14*l.* per fathom. The 72 driving west, lode 3 ft. wide, producing a little tin, but not to value. The lode in the 60 driving east of rise is worth 15*l.* per fm. The lode in the 60 driving east of cross-cut is worth 70*l.* per fm. The lode in the 60 driving west of cross-cut is about 2 ft. wide, producing a little tin, but not to value. The lode in the 50 driving east of main rise is 3 ft. wide, producing a little tin, and saving work for the stamps. The rise in the back of the 60 the lode is about 3 ft. wide, producing a little tin, but not to value. The stopes in the bottom of the 72 are worth 25*l.* per fm. The stopes in the back of 72 are worth 25*l.* per fathom. The stopes in the back of the 72 are worth 30*l.* per fathom. In the No. 2 stopes in the back of the 72 the lode is worth 50*l.* per fathom. In the stopes in the back of the 60 the lode is worth 70*l.* per fathom. On the whole the mine never looked better than at the present time.—W. Vivian.

The Chairman said: Gentlemen, it is always a great joy to me to preside over West Kitty meetings. About four years ago you commenced your business as a Cost-book company, and I remember with extreme gratification the first meetings you had, and the cheerful manner in which you responded to the calls made. I can say that those meetings were as pleasant as the meetings which we have held since we have had the pleasure of declaring very handsome dividends. When this company was started, tin was exactly the same price as we find it to-day. We thought then it was an admirable price, and we congratulated one another on the prospect of being able to get such a good price if we were fortunate enough to meet with the tin. Well, gentlemen, you know that we soon met with the tin, and have been selling it ever since at remunerative rates, and to-day we find ourselves just where we were as far as the price of tin is concerned. If we are not satisfied I think we ought to be; and if tin keeps at the present price we shall be very handsomely remunerated, seeing that we can get cent. per cent. profit on our produce. Here is the secret, or one of the secrets, of our extraordinary success, which some pretend not to believe in to this very hour. But if they want more evidence of the success of West Kitty they shall very soon have it. (Cheers.) Now, gentlemen, what have we in West Kitty? Is there a gentleman in this room who can answer the question? We know what is in sight; we know, notwithstanding the profits we have made, we have about as much tin in sight, at the present moment not taken away, as ever we had in the history of the mine. (Cheers.) That is a very encouraging feature, and of very great importance. What has transpired since the last meeting of shareholders? We know we have made a discovery in the 60 east of cross-cut, but many of you do not know where the 60 east of cross-cut is; but when Capt. Vivian tells you that you have between the 60 east of cross-cut and the 60 east of rise an extent of ground of not less than 25 fms., you will see the enormous advantage of that discovery. (Hear, hear.) Why, gentlemen, we had at the 60, east of rise, one of the richest courses of ore ever discovered in the history of Cornwall; but we have an equally rich course of ore in the 60 east of cross-cut, which is 25 fathoms distance from the 60 east of rise. But that is not all. You have a very rich course of tin ground from the 60 east of rise down to the bottom level in the mine, which is called the 84 fm. level. Before you get to the bottom of the shaft from the 84 you have a further distance of about 25 fms.; and, gentlemen, the ground from the 84 to the bottom of the mine will itself take 10 years to work away. I might say more on this question greatly to encourage you if I liked, but I do not want to give you all the good news at one time; I want to reserve a little for another occasion, lest I should spend myself, and have nothing more to say. (A laugh.) Well, now, gentlemen, it is very evident, and Mr. Dutton, who is more of a practical miner, perhaps, than any other shareholder in this room excepting the manager, will tell you the extraordinary richness of this ground as it extends south. It will be impossible for us to estimate the length of time it will take to work out West Kitty. I have told the shareholders over and over again that it was not a mine which was going to declare a few dividends, and then stop. It will go on declaring dividends, and whilst not in the slightest degree wishing to raise the market value of shares (for I have no interest in doing that whatever), yet I have no hesitation in saying that no reasonable man would venture to say that West Kitty is not worth double the market price at which it is selling at the present time. (Cheers.) I can quite understand that, in common with other securities, our shares are low, but I need not dwell on the question of shares. There are gentlemen in this room who know much more about the market price than I do. All I can say to the shareholders of this company is that at the present price we have a security, than which I do not believe there is a safer mining security in existence. (Cheers.) Well, now, gentlemen, we are not in the fashion. I never like to be in the fashion myself personally. Somehow or other I am years behind the age, and I believe to-day we are not in the fashion. If we were in the fashion we should have something not disclosed in our accounts, we should have had a solid debit balance, and we should have credited tin which we had not sold. (A laugh.) Gentlemen, we are not in the fashion, and I must be pardoned if I say we do not intend to be in the fashion in these matters. (Hear, hear.) We intend to have no concealment in this company, and have everything brought to the light whether it is favourable or unfavourable; and we mean by this line of action to protect our undertaking against those irregularities which have brought discredit upon many mining companies. Upon this question we do not wish to be misunderstood; on the contrary, I think the time has come when a very important company like this should speak out, and when every important company should be commended for taking this line, which is the only safe business line for business men to follow. (Hear, hear.) Now, gentlemen, I have very great pleasure in moving the adoption of the balance-sheet, and I am quite sure you will pass it with your usual unanimity and goodwill. I move that the accounts and the manager's report be received and adopted. (Cheers.)

Mr. James: You said the lode became very much richer south?——The Chairman: Yes.

Mr. James: What ground is next to you south?——The Chairman: New Kitty.

Mr. James: Then as the riches extend south, no doubt they have the lode in New Kitty?——The Chairman: Yes, no doubt about it.

Capt. Vivian, in reply to a question, said: I think the Chairman has said almost all that I had to say. He says we have 25 fms. above the 60 east of rise to the 60 east of cross-cut, and 25 fms. below that. That is, we have ground open 50 fms. high from the 60 up to the 60 east of cross-cut; and we have a cross-cut driving at the present bottom of the mine which will open another 50 fms. of ground from the 80 to the 84. The lode is so flat that we scarcely know what to call it. So there are 50 fms. of ground of which nothing has been seen. If that ground turns out as good as Mr. Reynolds hopes, it will take an additional ten years' work to explore the mine.

Mr. Couzens: It is an important point, you see, to be able to open 50 fathoms more in depth, without sinking a shaft any further, which will save hundreds of pounds, and we shall take away the ground more easily and cheaply. (Cheers.)

The resolution for the adoption of the agent's report and accounts, having been seconded by Mr. Couzens, was put, and carried unanimously.

The Chairman said the next resolution, which was a pleasing one, would be moved by Mr. Couzens.

Mr. Couzens said: Gentlemen, mine is a very pleasing duty, as Mr. Reynolds has already hinted, which is to move the dividend which has to be declared at this meeting. I beg to move—"That a dividend of 11s. per share, free of income tax, on the 6000 shares of the company, be and is hereby declared, payable forthwith." I think, taking all things into consideration, we should be well satisfied with the dividend which I rise to propose. (Hear, hear.) Several things have been against us during the quarter. There have been some extra expenses, as you will see by the report and balance-sheet, and the price of tin has fallen considerably. But for these circumstances we should have had a dividend of 12s. 6d. per share; but I think, seeing these unfavourable circumstances have occurred, and these extra expenses have been met, and that tin has fallen, we have all reason to be well satisfied with an 11s. dividend. (Cheers.) I watch the tin market very closely, having a heavy stake in West and New Kitty Mines chiefly, and I think that this drop in tin can be but temporary. You will generally notice that these drops occur there is generally a rebound; and although tin is very low, and has gone very much lower than I thought, yet I think you will see prices turn, and that we shall have a rise again. But it is comforting to us that we can make a profit with the present price of tin. If any mine can live West Kitty can. (Cheers.) When I bought West Kitty four years ago that was one thing which induced me to buy so heavily.

Mr. James: I do not think there is another mine in the county of Cornwall which can do it. (Hear, hear.)

Mr. Couzens: I think so too. Captain Vivian told me that West Kitty was good at the time of the depression some years ago, and time has proved the truth of his remarks, and we have reason to be satisfied and not afraid of the future. There is a brighter time in store for tin, and we have reason to be encouraged to go on with the working, and we may expect many good dividends in the time to come. (Cheers.) I have been frightened at the awful debit balance in some of the Cornish mines. There are some of them, I believe, good mines, but I think it is abominable that they should incur such liabilities. (Hear, hear.) The shareholders never know where they are, and I believe that fact has injured West Kitty relatively; it has so shaken the confidence of people outside mining that they do not believe there is anything good or true in mining, and this is largely to be attributed to the fact that these balances have been concealed for years and carried over and over. And I am glad to see that some of them are lately waking up to the fact that it is against their own interest to carry on heavy debit balances, and have made heavy calls to wipe off the balances in due course. I believe if those were wiped off in all cases West Kitty shares would command 17*l.* or 18*l.* per share. It will be to their advantage, as well as ours, if they copy our system. (Cheers.)

Mr. Dutton said he had much pleasure in seconding the motion. He was confident the dividend had been fairly and fully earned, and that the shareholders were fully justified in distributing it. He endorsed all that Mr. Couzens had so clearly stated with regard to the future. He might mention they had never in the accounts taken credit for anything at the mine. If a balance were struck of all the assets it would rather astonish the shareholders to see the large credit balance. (Hear, hear.) As regarded the future, they might all hope that the price of tin would be more favourable. But, even at the present price, they had nothing to complain of, as they could make more than half profit, and reserves were being opened up which would last a long time, and there were "20 years' hard labour" before them in that direction. (A laugh.) The shareholders might rest satisfied that Capt. Vivian would do his best for their interests. (Hear, hear.) A great deal of work had been conscientiously done in the last two years, and the mine had been developed in the most miner-like manner. It was a pleasure to see a mine managed so well. (Hear, hear.)

Mr. Payne said he should rather have preferred a somewhat smaller dividend, as he always liked to see a good balance kept in hand.

Mr. Lennox said the money had been earned, and, therefore, the shareholders were fully justified in distributing it. (Hear, hear.)

The Chairman said it might comfort Mr. Payne to know that there were 10 tons of tin on the way to the smelting-works for which no credit had been taken in the accounts.

Mr. Michell said they had *bona fide* earned the money, and were entitled to divide it. The West Kitty was in the best financial position of any mine in Cornwall.

The resolution was then put, and carried unanimously.

The Chairman said that in accordance with the resolutions the transfers had been audited by Mr. Budd (to whom the shareholders were much indebted) and himself; but the work was long, and it was felt that it would be better to have them audited by an accountant.

Mr. Budd moved that Mr. A. Gostick be appointed auditor of the share and financial accounts, with a remuneration of 10*l.* per annum.——The motion was seconded, and carried unanimously.

Mr. Lennox moved a vote of thanks to the committee, and that they be re-elected. Those gentlemen had done their work well; they had received no remuneration, and he had very great pleasure in moving their re-election.

Mr. Bumpus seconded the motion, which was supported by Mr. Payne, and carried unanimously.

On the motion of Mr. Lennox, seconded by Mr. Couzens, a vote of thanks was passed to the Chairman, and the meeting broke up.

NEW KITTY MINE COMPANY.

The four-monthly meeting of shareholders was held at the offices of the company, Walbrook, on Wednesday,

Mr. John B. Reynolds in the chair.

Mr. Fredk. J. Harvey (the secretary) read the notice calling the meeting. The accounts, which showed a balance of cash at bankers of 164*l.* 5s. 9d., with no liabilities due and unpaid, were also read, and Mr. Harvey stated that they had been examined and certified by Mr. Payne, one of the shareholders.

The agent's report, which was read, was as follows:—

Nov. 26.—I beg to hand you the following report:—Since the meeting held on Aug. 1 last we have intersected the West Kitty flat lode at the 50, north of engine-shaft, and we have opened on the course of the lode about 9 fms.; the lode is small at present, producing stones of tin, but not to value.—Thomas's Shaft: We are sinking on the course of the lode; the shaft is now down 18 fms. below the adit level; lode 3 ft. wide, producing tin, mundic, and copper ore. The last 3 ft. in sinking we have had a rich branch of copper ore, far better than any we have had before, which indicates our near approach to a rich course of tin; the characteristic is invariable in this district. The country rock is also improving in depth. I consider our prospects in this mine are of more than an ordinary character, seeing we have not yet reached the depth where the lode commenced to make tin in the adjoining mines—Wheal Kitty and West Kitty. Our water charges are easy. We are sinking the shaft about 2 fathoms per month. On the whole, considering the position of the mine, the two shafts at which we are working, the extent of ground between the two shafts is fully 130 fathoms—also the indications as presented by both the lode and strata, we may reasonably expect a profitable and lasting mine.—Wm. Vivian.

The Chairman said: Gentlemen, before this meeting I had a lecture, in fact two lectures, one from my friend Capt. Vivian, and the other from my friend Mr. Budd. They, in their kindly way, told me it was really not fair on my part to anticipate everything which they themselves might say. They gave me to understand that it was not in my province to say anything about the actual state of the mine, but to leave that to other people. (A laugh.) Well, if I am not to say anything about the state of the mine what am I to speak about? You see I am first in the field, am I not? I am your chosen Chairman, and you know I really must say something about the state of New Kitty, notwithstanding the warnings from my excellent friends Capt. Vivian and Mr. Budd. They can censure me afterwards if they like; it will only infuse into the meeting a little variety, which will not harm any of us. (A laugh.) But, gentlemen, I must say I am very sorry that notice was not taken yesterday at the West Kitty meeting of an important fact in connection with that mine. The omission, as far as I am concerned, was quite unintentional, and I am quite certain that Capt. Vivian had a most worthy motive for not calling attention to it. I refer to the alteration which has taken place in a certain portion of the western ground in West Kitty. It appears they are putting up a rise in a certain part there—I leave Capt. Vivian to explain the exact place—and they have blasted down a very rich piece of tin. I know this is not a West Kitty meeting, gentlemen, I am perfectly aware of that; but we cannot discuss the merits of New Kitty without discussing the merits of the western ground in West Kitty. You will draw your own inferences from this statement after you have heard our excellent friend, Captain Vivian. The report of New Kitty—and I suppose it is within my province to speak upon that—(a laugh)—is the best ever presented to a meeting of our shareholders. (Cheers.) I assure you gentlemen, you cannot possibly imagine my gratification on the receipt of any good news from New Kitty. Important as the other mines may be, I consider that New Kitty is the next in importance to West Kitty to the St. Agnes district, and I can conceive nothing which would add greater lustre to St. Agnes than a rich discovery of mineral in the New Kitty Mine; and, judging from the report, which I have heard with so much pleasure, it is very evident that our chances of success are of a very high order. Now, gentlemen, passing from that—and you will agree with me I have left ample room for the eloquence of my friends, Mr. Budd and Captain Vivian—passing from that, let me call your attention to the unobtrusive balance-sheet before you. There you have a credit balance, as shown in the bank book, of 164*l.*, and you have, gentlemen, that very significant note attached, to the effect that there are no liabilities due and unpaid. (Cheers.) Now, gentlemen, no one anticipates the contingency of winding-up the New Kitty Company; but supposing you resolved to wind up to-day, none of you, gentlemen, would be called upon for a single shilling; on the contrary, you would have a dividend returned to you from the assets, and the whole of the affairs could be wound up and settled by 12 o'clock to-morrow. (Hear, hear.) As I said at the Trevaunance meeting, I would pay all the liabilities in connection with the mines in this office, due and unpaid, for a 5*l.* note; therefore, I can conceive nothing in the matter of finance which is calculated now-a-days to give greater confidence in mining companies than the fact I have indicated. And the credit of this state of things is unquestionably due to you. It is mainly due, and I admit it with the greatest possible pleasure, to the largest shareholder in the mine, to Mr. Couzens, than whom nobody ever paid calls more cheerfully, and spoke up more resolutely for the mine; and the fact which will give me greater pleasure than anything else in the event of this mine turning up trumps very quickly, will be the circumstance that Mr. Couzens thereby will reap a very enormous advantage, an advantage which, gentlemen, I am sure you will all agree with me, he is so fully entitled to. (Hear, hear.) I know, gentlemen, there are certain shareholders in this room who have provided for themselves very amply by their former success in similar enterprises, and I am sure, gentlemen, you will share a similar success if you stick resolutely to those principles which you have laid down for yourselves. I am glad to say I have never attended a New Kitty meeting where there has been an uncertain sound upon the question of business principle. It was my misfortune to have to attend a meeting of shareholders some time ago when some gentleman, who appears to be more like a philanthropist than a business man, urged his co-proprietors to mercy, and I do not know what besides, with respect to those persons who would not or could not bear their share of the responsibility. But they would all bear their proportionate share of success, and they certainly ought to be prompt to bear their proportionate share of liability. (Hear, hear.) Now, gentlemen, our business to-day is of the most simple and agreeable character; it is simple because of the simplicity of the accounts, and agreeable because of the prospects of New Kitty. I heartily concur with all those concerned in this St. Agnes district. I see clearly enough it is coming very rapidly to the front, in spite of what anybody may say to the contrary, and if any persons try to knock down the shares in the mines for a short time they can have the amusement, and they are welcome to it; but it will only be I think to see a rise again to prices far exceeding any prices which they have ever reached before. (Cheers.) I have pleasure in moving the adoption of the report of the agent and the accounts.——Mr. Samuel Cook seconded the motion.

Captain Vivian said that with respect to the improvements in New Kitty he had stated in his report that they had some copper in the shaft, and copper, as had been said over and over again, was the forerunner of tin in the St. Agnes district. In the western ground in West Kitty the two improvements came together, and were closely connected. They were driving the 60 fm. level west of the cross-cut; they had also put up a rise 18 fathoms above the 60, on the line of the lode, the perpendicular of which was not more than 6 or 7 fathoms. That rise had gone up in rather poor ground; it had been reported to be worth 7*l.* or 8*l.* per fathom. That was going in the direction of New Kitty shaft. They had driven a level about 18 or 20 fathoms to the west of this cross-cut, and soon after they started from the cross-cut, and for the last 6 or 7 fathoms the lode was poor and small. About eight or ten days since he took the men out of the ends, and blasted down the copper between the end and the rise, in order to have it dressed with what they got up before. They broke about 2 ft., upward a day or two ago, and brought down some splendid stones of tin. I refer to West Kitty. This was 4 or 5 fathoms west of the cross-cut, where the rise went up in poor ground. There they had broken down some rich stones of copper. What that tin was going to make he was not going to say. He did not make any mention of that in the West Kitty report, there not then having been enough seen. This showed that they had the copper in West Kitty, and the tin proved the copper going into New Kitty shaft. He thought their chances were everything they could expect and desire. There was every reason to believe that there were thousands of tons of tin between the 60 fm. level in West Kitty and the bottom of Thomas' shaft in New Kitty. (Cheers.) Therefore they would push on the sinking of Thomas' shaft, which was being done as fast as possible. The place were tin was rich in Wheal Kitty on this lode was 20 fathoms perpendicularly, and here they were not down more than 18 fathoms on the course of the lode, which would not give more than 10 fms. perpendicularly. So they had 10 fathoms more to sink Thomas' shaft to reach the depth where the tin made in the adjoining mine. Taking everything into consideration he thought they had nothing to fear in New Kitty, but simply to push on and the prize would come. (Cheers.)

The resolution was put, and carried unanimously.

Mr. Couzens said he rose to move that for the purpose of carrying on the operations of the mine for the next three months a call of 2s. per share be made, payable at the bankers of the company, Messrs. Williams, Williams, and Grylls, Truro, on or before Dec. 15 next. He said they all knew his relation to New Kitty, and he had very little fresh to say regarding that property. He had had great faith in the mine from the very first, and his faith to-day was stronger than it had ever been, and he had shown his faith by sticking to the mine. He had paid nearly 2000*l.* in calls, which was a practical expression of belief, and he believed the time was not far distant when he would reap his reward in New Kitty as he had done in West Kitty. (Cheers.) The improvement referred to by Capt. Vivian was most important, and it was likely to be more important still. He referred to some of the points in the working, and said the position and prospects of the mine were everything which could be desired, and he had every reason to believe, from a most intimate acquaintance with the mine, that New Kitty would turn out nearly, if not equally, as good as West Kitty.

Mr. Michell seconded the making of the call. He said that the prospects in New Kitty were of more than an ordinary kind; they must push on the works as vigorously as possible, it being simply a work of time and money before they made returns.——The resolution was carried unanimously.

Mr. Payne moved that the audit and finance committee be re-elected, and the thanks of the shareholders given them for their services.——Mr. Budd seconded the motion, which was put, and carried unanimously.

On the motion of Mr. Lennox, seconded by Mr. Couzens, a vote of thanks was passed to the Chairman, and the meeting broke up.

TREVAUNANCE UNITED MINES COMPANY.

The four-monthly meeting of shareholders was held at the offices of the company, Walbrook, on Wednesday,

Mr. John B. Reynolds in the chair.

Mr. Fredk. J. Harvey (the secretary) read the notice calling the meeting.

The accounts (showing a balance due to the bankers of 40*l.* 13s. 2d.) were also read. The agent's report, which was read, was as follows:

Nov. 26.—I beg to hand you the following report:—Since the meeting held on July 25 last we have intersected the north, or copper lode in the cross-cut driving south at the 55. We have opened on this lode about 9 ft.; worth about 15*l.* per fathom for copper ore. We still continue to push on the cross-cut south to intersect the tin lode, which I consider is some fathoms further south of our present end. We are also driving south 100 fms. east of the cross-cut above mentioned in order to intersect the same lode. I consider our prospects are very encouraging, and the chances are very good. We may reasonably expect to open up a good profitable mine above the adit or 55, seeing that the parallel lodes in this and the adjoining mine have given immense profits above the adit level, which is the same level that we are exploring on at present, and I may state that the strata is precisely the same. On the whole we have, I consider, every reason to expect good results.—W. Vivian.

The Chairman said: Gentlemen, I very gladly take the chair in response to your request, the more so as I may say, without the slightest hesitation, that this is one of the most promising things with which I have ever been connected. I will first refer to the balance-sheet, or rather statement of accounts. You will see there a small credit for tin, and I have no doubt the first thought which has struck some of you is that of disappointment because that item is not larger. However the explanation is very simple. We only credit what tin we have sold, and we have not had sufficient water until very recently to stamp our tin, consequently we have three tons of tin on the dressing-floors on the way to the smelting-house. If we had been able to realise that tin you would have seen that our statement of accounts would have shown somewhat differently. There is allusion made in the report to the discovery of the copper lode. We have not been able to work on that lode because we have been obliged to prosecute the cross-cut with the view of intersecting the tin lode, which is a little further ahead. Capt. Vivian has valued that copper lode at 15*l.* per fathom, and he has a habit of undervaluing every point in these mines, and I may say that instead of being worth 15*l.* per fathom it is really worth 25*l.*, and it is a very valuable copper lode indeed, so much so that we have no doubt it will greatly increase the value of certain mines in this district. Of course if you have a good rich copper lode it is just as good as having a good tin lode, and there is no doubt when we go to work upon that copper lode we shall derive profitable results as we get into it. There is a gentleman here, Mr. Michell, who will tell you that the copper is of as rich a description as any that has been raised in any mine in Cornwall. We have specimens on the mine from this lode which are as rich as anything they have ever found in South Caradon. With respect to the tin which is further ahead there is no doubt that there the prospects of the mine are still better. This is not a matter of doubt, as far as I can learn; it is as much a matter of certainty as anything can be a matter of certainty in which mining is concerned. It is not only hoped but believed that when this tin lode is reached it will be of a most valuable character. Now taking these facts alone into consideration, you can see for yourselves, gentlemen, that this is really a *bona fide* enterprise, promising results (really I am not exaggerating when I say) as I believe, second not even to West Kitty. (Cheers.) Now, gentlemen, of course, we all know it is the unexpected which generally occurs. I may say when this company started its business I did not think that this would be second in the list to West Kitty as far as progress and profit would be concerned, but it now turns out that this is really likely to be the case, and that this mine, so quickly has it been brought about, is likely to be the next profitable one in this office. (Cheers.) I could have wished, perhaps, it would be otherwise, and that one or two mines which have been longer worked should take the lead; but, of course, these matters are beyond human control, and we can only congratulate ourselves and hope that the other mines will very quickly follow suit. Now, gentlemen, we shall have, of course, to provide for a slight estimated deficiency during the next four months, but that will be so slight and the demand upon you will be so insignificant that you will not feel it at all. I have letters from shareholders in various parts of the country, thanking us for the way in which we endeavour to keep the accounts, and for the manner in which we endeavour to manage matters committed to our care; but, whilst very highly appreciating the very laudatory comments which are made upon the management of the mines in this office, I must remind these numerous correspondents that it is not the officers who manage these mines—it is you, gentlemen, in meeting assembled to whom the credit is due, and the officers simply carry out your instructions. You say, and I think very wisely so, that we will never have any debts due and unpaid, and the officers endeavour to regulate your business accordingly. I think the greatest credit is due to the shareholders who throw such forethought into the management of their affairs. You have nothing to make you uneasy even in these days of darkness. You have no debit balance to frighten you, no liabilities in prospect to make you in the slightest degree uneasy. You have nothing in my judgment but success to look forward to; and I can only say no shareholders deserve success more than those in this Trevaunance Company. (Cheers.) These are not only my sentiments which I have ventured briefly to express, but they are the sentiments of those outside this concern. This company has a first-class outside reputation, and probably that is in part caused by the fact that you stick firmly by your shares, and do not offer them on the market for sale. Of course that is a wise policy to adopt, especially in these times of depression through which we are now passing. Now, gentlemen, about this period of depression. Probably some of you would like to know how long it is to last? That is a question no one can answer; but we who have been long in business are accustomed to such periods. These times come periodically seemingly, and they generally pass away when persons are the most desponding. Just at this time no doubt there are some persons who are predicting a very much more serious fall in the price of various stocks and shares, and our good old friends the "bears" are very busy pulling the longest faces they possibly can, and putting as much money in their pockets as possible. I have always noticed that when these gentlemen are so very much in earnest in their prediction of further fall in prices and still darker days, it is then we are on the eve of an upward movement; in other words, that the turn of the tide is about to take place, and so I see that yesterday the tin market was better. (Cheers.) Now, gentlemen, as far as we are concerned, we may be cheerful to-day and very thankful, and I have no doubt whether tin goes up or goes lower, we shall hold on our course, and because of the cheapness with which we shall be able to produce the article when the mass of tin is reached we shall be able to look with comparative indifference on those fluctuations which are so serious to many. (Cheers.) I beg to move the adoption of the accounts and manager's report.

Mr. Geo. Budd seconded the motion.

Mr. Lennox: Do I understand that you expect to make considerable profit in the case of Trevaunance above adit?——Capt. Vivian: Yes. At Trevaunance, on the lode which we are working now, nothing has been done above the adit.

Mr. Michell: We have always seen in Cornwall that the productive lodes begin to produce at comparatively shallow depths. This district is one exceptional in the character I have referred to. The tin and copper in this district make shallow and also make deep. The Trevaunance Mine, a portion of which was formerly worked by the Enys family, who made some 200,000*l.* out of it, was then worked both at and above the adit level. If you get as fine a tin lode as the copper lode, you will have one of the finest mines in Cornwall. (Hear, hear.) With respect to durability above adit level, look at other lodes in the district which have been worked for generations. As regarded the copper, which came most unexpectedly, they were the most beautiful specimens of copper ore I have seen in my life, and were like the Caradon ore—black ore, white ore, and yellow ore in one stone. You may think this Trevaunance is a small matter; but you will find one day that it is not so small as you anticipate. (Hear, hear.)

Capt. Vivian: I may say I got the copper ore unexpectedly; but I find in the St. Agnes district that the copper lodes lead to great courses of tin somewhat close by. In West Kitty, the adjoining mine, we are now dressing copper ore, and next month we shall sell 30 tons of ore. We got this in the midst of our richest tin lode at the 60; we are getting the copper mixed up with it. We

shall raise from 200*l.* to 300*l.* of copper ore from West Kitty, but we do not say anything about it in the report because it is the forerunner of a great course of tin. I shall say something more about that at New Kitty. At Trevaunance we came across the copper. We have a lode worth 15*l.* to 25*l.* per fathom, although we did not say much about it; but I stated it because although we did not go for the copper yet as sure as we are here there is a great course of tin very close to it. Some gentlemen may say—Why not go and work upon the copper? The cross-cut has been driven 60 or 70 fms. from the shaft, and our ventilation is not good. We cannot work more men than we are doing at present, therefore I think the tin of more importance than the copper. We have another point where we have driven the adit, and we struck a lode at both points, and that lode will be good at both points. We have also a shaft midway between where we are now driving and the cross-cut, and there is a cross-cut there, and we can cut the lode in a very few months in the midst; and we can open up 100 fms. of ground in no time; and if the lode prove as productive as the parallel lode we can see a splendid dividend mine there in no time. I consider in Trevaunance we have one of the best speculations—in fact, I hardly put it as a speculation, but as one of the best things in Cornwall. (Cheers.)

The resolution was then put and carried unanimously.

Mr. S. PAYNE (Exeter) expressed his full and increasing confidence in the mine, and moved that in order to carry on operations at the mine during the next three months a call of 1s. per share be made on the 8000 shares of the company, payable at the bankers of the company, Messrs. Williams, Williams, and Grylls, Truro, on or before Dec. 14, 1883.—A SHAREHOLDER having seconded the motion, it was put and carried unanimously.

Mr. LENNOX said he was extremely pleased to hear the statements which had been made by Captain Vivian and Mr. Michell. He felt the shareholders had every reason to look hopefully to the success of the undertaking. He moved a vote of thanks to the audit and finance committee, and that they be re-elected. In a progressive mine like this it was of the utmost importance that they should have voluntary service on the part of the committee. Many a struggling mine was crippled by the large fees paid to the directors. He believed that Trevaunance could be carried on without the proposed call, but it was better to have ample funds in hand for every purpose. All the mines in this office were in a good financial position, thanks to the audit and finance committees appointed from time to time by the shareholders.—Mr. DORE seconded the motion, which was carried unanimously.

The CHAIRMAN, in acknowledging the vote, said, in order to show the financial position of the company, that all the liabilities, due and unpaid in the office, could be covered by a 5*l.* note. (Cheers.)

On the motion of Mr. LENNOX a cordial vote of thanks was passed to the Chairman, and the meeting broke up.

SOUTH FRANCES.—The shareholders met on Thursday (Mr. C. Bawden in the chair). The loss on the four months was 347*l.*, and the 200*l.* credit balance brought forward left a balance against the mine of 147*l.* The tin sold amounted to 133 tons. The loss was ascribed to exceptional causes. A contract has been entered into with Henderson and Sons to sink the western shaft by steam.

BOTALLACK.—At the meeting on Wednesday (Mr. S. H. James, purser, in the chair), the accounts showed a debit balance of 3941*l.* The accounts were passed, and it was resolved that the purser take prompt measures to enforce payment of arrears of call and amount due on forfeited shares, amounting to 532*l.* 18s. 11d. The agents reported upon the various points of operation. Mr. T. B. Bolitho remarked that while Mr. James held the pursership the adventurers were quite sure that everything connected with the mine would be efficiently managed; that everything would be charged, and nothing kept back, and that all things would be done in a most straightforward way. The mine had the advantage that the agents were not running about all over the country, doing what they ought not to do. Mr. Bolitho wished the adventurers had some little encouragement from the lords in the time of adversity. Persons could hardly be expected to take shares in a mine unless they had to do with a liberal lord.—The purser said the only thing that was wanted in Botallack was money to develope the mine. He was afraid that if they had great relinquishments of shares, the affair might be crippled altogether. As long as he was the purser of the mine adventurers would find the accounts, the balance-sheet and the bankers' pass-book to be perfectly correct, and he would be pleased for anyone to examine them.

WEST POLDICE.—At the meeting on Tuesday (Mr. W. Teague in the chair) the accounts showed a loss of 1588*l.*, increasing the debit balance to 3220*l.* The Chairman, in reply to questions, stated that every shilling of labour cost had been duly charged, and that all the tin credited had been absolutely sold, and all liabilities brought up to Oct. 31. The labour costs were charged to Nov. 17. They imported their own coals, and charged every month what they consumed. The Chairman, in his report, said that in the 65, west of Trefusis shaft, the lode was very highly mineralised, and worth for tin, copper, and arsenic 20*l.* a fathom. The lode was 7 ft. wide, and a more promising one could not be seen. The specimens shown that day were convincing proofs of that statement. He had thought it advisable to suspend several of the tutwork bargains, and had set the stopes on tribute to about 30 men and boys. These alterations would considerably lessen their monthly cost. At the same time an effectual trial would be made of the principal points, which offered fair chances of success. He had very great faith in, and a very strong opinion of, the 65 and 80 fm. levels. Magor's shaft was improving, and the ground they were driving was improving every foot that they drove. They would be worse than fools if they abandoned the mine at the present time, with about 30,000*l.* all laid out and paid for since it was resuscitated in order to put the mine in a good position. When the levels came under the ground referred to, if they proved valueless he should be the first to say he had had enough, and the sooner—under those circumstances—West Poldice was closed the better.—Mr. JOSE (Mellingey), the second largest shareholder in the mine, said he entertained similar views. The shareholders generally considered the position and prospects of the mine very encouraging.

SOUTH AFRICAN BRUSH ELECTRIC LIGHT AND POWER COMPANY.—At the meeting on Monday (Lieut.-Col. G. Coxon in the chair) the directors' report was presented, showing a loss of 5423*l.* on the year's working, and it was stated that this must not be taken as showing the probable result of the future. The Chairman, in moving the adoption of the report, contended that a suggestion which had been made for the winding-up of the company was ill-timed, contracts being still in progress. It would not be advisable either to act on such a suggestion, and a better alternative would be to reduce the capital from 5*l.* a share to 3*l.*, leaving 10s. a share only to call up. The revenue of the company now about balanced the expenditure. The motion having been seconded, a discussion followed, in which several shareholders took part, and it was suggested that the capital should be reduced to 2*l.* 10s. a share, that being the amount already called up. A motion was brought forward adjourning the meeting, but this was lost and ultimately the report was adopted, the directors promising that a special meeting should be speedily called to consider the reduction of the capital.

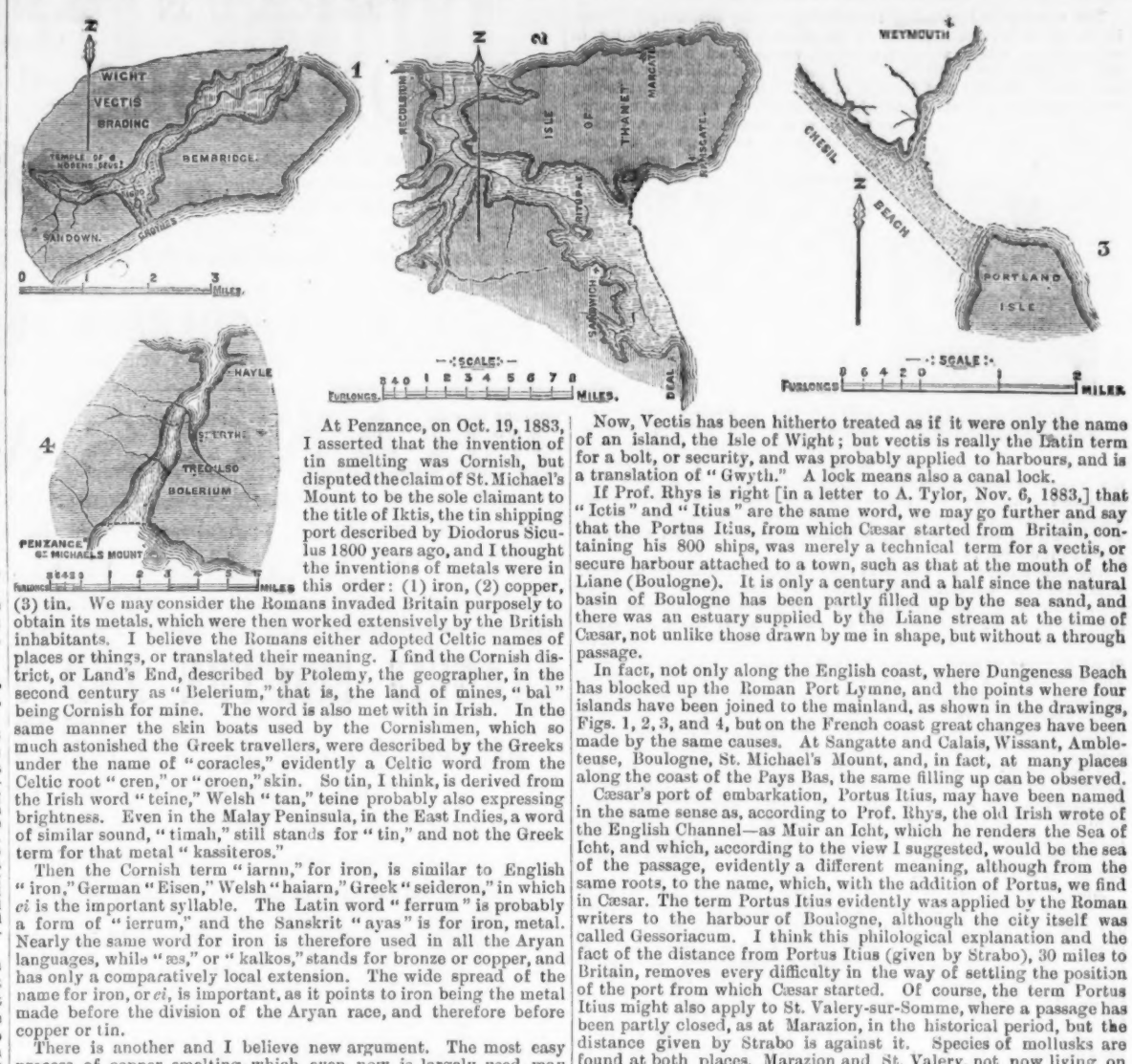
HAMMOND ELECTRIC LIGHT AND POWER SUPPLY COMPANY.—At the meeting on Tuesday (Sir Charles Young in the chair) after brief reference to the details entered into at the extraordinary meeting the Chairman formally moved the confirmation of the resolution authorising the directors to create and issue 16,000 deferred shares, of the nominal value of 5*l.* each, on the terms of the agreement already approved by the company, and authorised to be carried into effect with the Ferranti Company.—Mr. Robert Hammond seconded the motion, and stated that he was glad to be able to inform them that in the interval between the two meetings the Ferranti installation made by the company at the First Avenue Hotel had been started, and gave immense satisfaction last Thursday night, the evening of the opening of the hotel. One thousand lights were running there from one machine.—The resolution was unanimously confirmed.

HILL AND MORTON.—Proceedings for liquidation with creditors under the Bankruptcy Act, 1869, have been instituted in the County Court of Warwickshire, at Coventry, "by Walter Thorold Hill and William Thomas Morton, trading in co-partnership under the style or firm of 'Hill and Morton,' at the Trafalgar Works, Upper Well-street and Gas-street, both in the City of Coventry, in the county of Warwick, as bicycle, tricycle, gun, and perambulator manufacturers; and also trading at Hill Cross, in the City of Coventry aforesaid, as watch manufacturers and jewellers, under the style of 'The Chronograph Watch and Jewellery Manufacturing Company;' the said Walter Thorold Hill now residing in lodgings at number 5, Trinity Terrace, and formerly residing in lodgings at number 20, Warwick-row, and the said William Thomas Morton, residing at number 12, Hill Cross, all in the City of Coventry." A general meeting of creditors of the above-named persons is summoned to be held at St. Michael's Hall, George-yard, Lombard-street, London, on Thursday, Dec. 6., at 12 o'clock at noon. Mr. John Faust, 18, Smithford-street, Coventry, is the solicitor for the said debtors. The publication of these facts will render unnecessary the insertion of letters from correspondents who have replied to the advertisements of the firm in the *Mining Journal*.

MANCHESTER GEOLOGICAL SOCIETY.—At the meeting on Tuesday next Mr. E. Leader Williams, M.Inst.C.E., will show his geological section of the Irwell and Mersey Valleys, with samples of the numerous borings he had taken. A paper "On Sigillaria (Pot-holes), and their Detection in the Roof of a Coal Seam by their Stigmarian Roots," by Mr. George Wild, will be read; and a Model of Patent Safety Catch for Wire-Rope Guides, exhibited and explained by Mr. W. Brown.

CASSELL'S PUBLICATIONS.—Archdeacon Farrar's Life and Work of St. Paul, part 23, contains the chapters on the Voyage and Shipwreck, on Paul's arrival at Rome, and on his Sojourn in Rome. Knight's Practical Dictionary of Mechanics, part 84, extends from Turbine to Valve.

IS IKTIS IN CORNWALL, AND DID IRON AND COPPER PRECEDE TIN?



At Penzance, on Oct. 19, 1883, I asserted that the invention of tin smelting was Cornish, but disputed the claim of St. Michael's Mount to be the sole claimant to the title of Iktis, the tin shipping port described by Diodorus Siculus 1800 years ago, and I thought the inventions of metals were in this order: (1) iron, (2) copper, (3) tin. We may consider the Romans invaded Britain purposely to obtain its metals, which were then worked extensively by the British inhabitants. I believe the Romans either adopted Celtic names of places or things, or translated their meaning. I find the Cornish district, or Land's End, described by Ptolemy, the geographer, in the second century as "Belerium," that is, the land of mines, "bal" being Cornish for mine. The word is also met with in Irish. In the same manner the skin boats used by the Cornishmen, which so much astonished the Greek travellers, were described by the Greeks under the name of "coracles," evidently a Celtic word from the Celtic root "cren," or "croen," skin. So tin, I think, is derived from the Irish word "teine," Welsh "tan," teine probably also expressing brightness. Even in the Malay Peninsula, in the East Indies, a word of similar sound, "timah," still stands for "tin," and not the Greek term for that metal "kassiteros."

Then the Cornish term "iarnn," for iron, is similar to English "iron," German "Eisen," Welsh "haiarn," Greek "seideron," in which *ei* is the important syllable. The Latin word "ferrum" is probably a form of "ierrum," and the Sanskrit "ayas" is for iron, metal. Nearly the same word for iron is therefore used in all the Aryan languages, while "æs," or "kalkos," stands for bronze or copper, and has only a comparatively local extension. The wide spread of the name for iron, or *ei*, is important, as it points to iron being the metal made before the division of the Aryan race, and therefore before copper or tin.

There is another and I believe new argument. The most easy process of copper smelting, which even now is largely used, may have been the only plan known in prehistoric times. To use this process it was necessary to provide iron to precipitate copper from solution. At the present time 6000 tons of iron are sent annually to the Rio Tinto Mines in Spain from Great Britain in order to precipitate the copper from solution.

It is possible that the discovery of the art of producing crude iron, which would be useful for precipitating copper, may have preceded the invention of bronze, and yet the art of forging difficult pieces may have been a later invention than that of casting bronze celts in metal moulds.

Iron, if not steel, appears to have been made in Egypt both in hearths and in crucibles certainly before 3124 B.C., but bronze was more used in Greece up to 650 B.C. than iron.

The smith in the sagas and folklore is the important person, not the caster or founder of bronze weapons. Why was the smith so important? Because he melted the small particles of gold found in the streams into small lumps, and with his hammer drew them out into wire and thin plates. Gold was made in such small quantities that it did not require large crucibles such as would be necessary for bronze. As iron was made by a simple welding or forging process, its production appears to be a more ancient art than bronze casting, which required large crucibles and mixing in exact proportions with tin, a process more difficult than in the infancy of metallurgy was likely to be invented. Then one ore of iron—ochre, was the first metallic ore collected, long before the discovery of any of the metal. Ochre is found collected for use as a paint to ornament the cave men in the Palæolithic period, and is associated with limestone and charcoal. Accident in the fire might have thus led to the discovery of metallic iron in very early times. Such particles of iron placed in a certain stream in the island of Anglesea (an early peopled district) would precipitate the copper in that stream in a state of pure copper, ready to mix with tin to make bronze.

In fact the idea of the transmutation of metals may have arisen from the fact well known to the ancients that iron placed in a stream in Thessaley became (as they supposed) copper.

Another point of great interest in this question is the position of Roman roads, proving a prior metallurgical trade, and, therefore, some considerable civilisation. The Romans erected their Roman villas and camps always near Roman roads, and these roads appear always arranged for military or metallurgical purposes, never for protecting agriculture, or levying imposts on the Britons. There is historical evidence that the Romans did not introduce metallurgy into Britain.

We may observe there is a great concentration of Roman roads at Winchester (Venta Belgarum). Roads meet at the point of junction from Exeter with this town, for bringing Cornish or Dartmoor tin, or lead and iron from the Mendips, to the Hampshire coast; iron from South Wales, and lead from North Wales. There were, near Winchester, several great ports for continental trade—Magnus Portus (Portsmouth), Trisantonis and Clausentum (Southampton). Winchester is near Beaulieu. Below Beaulieu six miles is Stansoar (stone) Point, from "stannum," tin. This is nearly opposite Gurnard's Bay (Gubernators, across the Solent two miles), where there are remains of Roman villas. Thence to Newport and Brading, where the great Roman discoveries have been recently made. Among the "Islands of Brittany" Ptolemy gives one as "Vectis," in Celtic Wyth.

Now, Vectis has been hitherto treated as if it were only the name of an island, the Isle of Wight; but vectis is really the Latin term for a bolt, or security, and was probably applied to harbours, and is a translation of "Gwyth." A lock means also a canal lock.

If Prof. Rhys is right [in a letter to A. Tylor, Nov. 6, 1883,] that "Ictis" and "Itius" are the same word, we may go further and say that the Portus Itius, from which Cæsar started from Britain, containing his 800 ships, was merely a technical term for a vectis, or secure harbour attached to a town, such as that at the mouth of the Liane (Boulogne). It is only a century and a half since the natural basin of Boulogne has been partly filled up by the sea sand, and there was an estuary supplied by the Liane stream at the time of Cæsar, not unlike those drawn by me in shape, but without a through passage.

In fact, not only along the English coast, where Dungeness Beach has blocked up the Roman Port Lymne, and the points where four islands have been joined to the mainland, as shown in the drawings, Figs. 1, 2, 3, and 4, but on the French coast great changes have been made by the same causes. At Sangatte and Calais, Wissant, Ambleteuse, Boulogne, St. Michael's Mount, and, in fact, at many places along the coast of the Pays Bas, the same filling up can be observed.

Cæsar's port of embarkation, Portus Itius, may have been named in the same sense as, according to Prof. Rhys, the old Irish wrote of the English Channel—as Muir an Icht, which he renders the Sea of Icht, and which, according to the view I suggested, would be the sea of the passage, evidently a different meaning, although from the same roots, to the name, which, with the addition of Portus, we find in Cæsar. The term Portus Itius evidently was applied by the Roman writers to the harbour of Boulogne, although the city itself was called Gessoriacum. I think this philological explanation and the fact of the distance from Portus Itius (given by Strabo), 30 miles to Britain, removes every difficulty in the way of settling the position of the port from which Cæsar started. Of course, the term Portus Itius might also apply to St. Valery-sur-Somme, where a passage has been partly closed, as at Marazion, in the historical period, but the distance given by Strabo is against it. Species of mollusks are found at both places, Marazion and St. Valery, not now living on the coast, and probably these estuaries or passages were only entirely open in the Crag period.

I have said Vectis is equivalent with the Celtic word "gwyth," a passage. Now, there is a closed passage or haven (a gwyth, or vectis, or iktis) from Sandown to Bembridge in the Isle of Wight (Fig. 1). From this passage the whole island gets its name "Gwyth" in Celtic, Latin "Vectis," Saxon "Wiht," English "Wight," never spelt "white," although it has white chalk cliffs.

The safety of any of the harbours called Vectis or Iktis arose from the fact of these islands (or parts of them) near the coast of Britain being peninsulas at low water and islands at high water. These were, therefore, typical natural harbours. The Greek writers, Diodorus Siculus and others, insist particularly upon this property of change with the tide. The remarkable tide contrasted strongly with the different circumstances in the Mediterranean. Now, the prevailing winds on the south coast of England have caused modern beaches to form, particularly at all of these four passages on the south coast of England, and many of the passages have been closed, as we know, in the historical epoch. Their ancient form is clearly shown in my woodcut. Now, the sea is entirely shut out by modern beaches and works.

The drawings show the changes which have occurred in Fig. 1, the Isle of Wight. Fig. 2 is the passage between the Isle of Thanet and Kent, closed in the historical period between Ritupæ and Regulbium. In Fig. 3, the Chesil Bank, has filled up the old waterway between the Isle of Portland and the mainland. Fig. 4, passage from St. Michael's Mount to Hayle. Gravel and steam tindrift closing up the ancient passage from near St. Michael's Mount at Marazion to Hayle. The type of all that has happened is well seen, Fig. 1, Vectis, the Isle of Wight. Even in 1670 there was only a groyne and a small alluvial deposit near Sandown. Nearly all the passage to Bembridge was an estuary, now it is nearly all dry land. The term "vectis" in Latin, or "iktis" in Greek, was no doubt applied to all the passages in these four islands.

The Cornish tin no doubt came in coracles, and by land on horses, to Magnus Portus or to Stransoar Point, for shipment to Brading, and was shipped from these Hampshire ports and Isle of Wight ports to the banks of the Seine, to be carried on horseback in 30 days to Marseilles. Thus both the Bembridge peninsula and St. Michael's Mount were shipping places for tin, and both were properly called Iktis and Vectis, and as usual we find there was no error in the Greek observations.

Then as to the period when the contour lines of the south coast began to change. The Crag period was that in which the great estuaries round the British coast began to be filled up. Then pebbles and sand were driven along the coast. I believe all the four channels in the drawing were open in the Crag period, and gradually closed up in the long period which intervened between the Crag and the present time. The continuous filling up has also occurred in the estuaries and passages on the opposite coast of the English Channel. It is probable that Portus Itius, at Gessoriacum? (Boulogne) obtained its name in a similar manner to Vectis and Iktis, as I have already stated.

We find pure iron B.C. 3124 in Egypt. If iron was a necessity for the production of copper, and the metal tin was of no use without copper, we may place the inventions of the metals in the following order:—(1) Iron, (2) copper, (3) tin. A. TYLOR.

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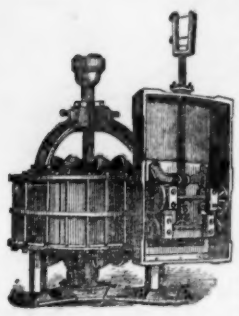
LITTLE GIANT TURBINE.

The constantly increasing recognition of the advantages of turbines for utilising the power of water, and their applicability in many places where another form of water-wheel is scarcely admissible, have frequently been referred to in the *Mining Journal*, and Messrs. Howes and Ewell, of Mark-lane, are now introducing the Little Giant Turbine, which they claim to be even superior to its predecessors. It is a double wheel, having two tiers of buckets, or, strictly speaking, two water-wheels, keyed to the same shaft, one above the other, and both running in the same case, the upper tier discharging the water at the top, and the lower one under the bottom of the case. The shaft is supported at the bottom end, and revolves upon an adjustable lignum vitæ step in the bottom bridgetree. The case is made of iron in the form of a scroll. The cases for all the sizes up to 24 in. are cast in one piece. The outside or scroll for larger sizes are made of boiler plate, which is planed parallel on the sides, and is held firmly between the cast-iron top and bottom plates by bolts. The case is supported by the bottom bridgetree, which is bolted firmly to it. The bridgetree is bolted firmly to the bottom of wheel-pit, upon which it rests. There are two hand-holes in the case, fitted with water-tight caps, which may be readily opened to remove any obstruction that may get into the wheel.



The convenience of this device will be best appreciated by those who have been obliged to lose hours of valuable time in stopping their mills to shut down head gates, in order to draw the water from their flume to get an opportunity to take the wheel apart to remove some obstruction that could have been taken from this wheel in as many minutes without disturbing head gates or dissecting wheel. The bearing in the upper bridgetree for shaft is bushed with lignum vitæ, and is adjustable, so that the wheel may at all times be held in the centre of case, thus preventing leakage and loss of power caused by the friction of the wheel rubbing against the case. The upper bridgetree is bolted firmly to top of case, is made of cast-iron, and of sufficient strength to prevent any springing of shaft. The gate box is made of cast-iron, and bolted to the case. The gate is also made of cast-iron, the surface of which, also the ways or seat upon which it slides, are planed, thus forming a perfectly watertight joint. The stem to the gate is made of wrought-iron, which is turned the whole length, and moves vertically through the gland or stuffing box in the top of gate box.

The pressure of water always holds the gate to its place and the joint remains tight as the gate wears. The gates for the larger sizes of wheels, particularly if to be used under high heads, are mounted upon friction rollers, which changes the friction from sliding to rolling friction, making the gate more easily operated. It is found in practice that the gate arrangement never breaks and is always tight. There being but one, it is reasonable to suppose it will be easier kept in order than those fitted in the old style with from 6 to 12 and 18 gate openings, and the slightest weed, leaves, or bit of bark catching in any of these openings will prevent the whole set of gates from shutting off the water; consequently the wheel and mill as well cannot be stopped, causing great inconvenience and in many cases great damage.

FOREIGN MINING AND METALLURGY.

The condition of the French Iron Trade is not very brilliant; in the districts round Paris, and also in the Nord, employment appears to be falling off rather than otherwise. In the Parisian district the St. Denis forge has stopped working, the management preferring to suspend operations rather than to produce at a loss. The French Economic Railways Company recently invited tenders for about 8000 tons of steel rails, required for narrow gauge lines which it is constructing in the department of the Allier. The tenders submitted ranged between 7*l.* 7s. 2d. and 8*l.* per ton. The lowest tender was that of the Steelworks Company of France, which was awarded the contract. The Orleans Railway Company is about to let contracts for 28 locomotives. The company is also constructing 10 other engines in its own workshops. Contracts will be let next week for the iron required for the hulls of four large French transatlantic vessels. These contracts will represent altogether 13,000 tons of plates, angle-iron, &c., and they will have a tendency, of course, to impart increased animation to affairs. The German iron trade is in a depressed state, and in Westphalia orders have become scarce, without much hope of immediate improvement. Casting pig has been in languid demand, and a fresh fall in prices is spoken of. As regards puddling pig quotations are so low already that it is almost impossible to reduce them still further. Plates have been much neglected upon the German market, and if the demand for wire has slightly revived it is still far from being completely satisfactory. The Franche-Compté Blast Furnaces, Foundries, and Forges Company has announced a dividend of 12s. per share for 1882-3. The French Naval and Railway Blast Furnaces and Forges Company has announced a dividend of 1*l.* 4s. per share for 1882-3.

The Belgian Iron Trade has continued dull and inactive. Reductions of wages have been enforced in the Charleroi district; the extent of the reduction is 10 per cent., and it has been submitted to without complaint. Orders have reached the works of late in a very sluggish fashion; most of the works are still employed, but their future prospects are dull and unsatisfactory. At the same time it should be remarked that there was a good deal of grumbling six months since, and that notwithstanding this the works have still been kept going fairly well. It is possible, of course, that this may also be the experience of the ensuing half-year. Hopes are entertained that some good orders will be given out in the course of December by the Belgian Government. It is also expected that a good influence will be exerted by the conventions recently concluded between the French Government and the six great French railway companies with a view to the construction of new lines. English casting pig has declined upon the Belgian markets to 2*l.* 4s. per ton. Belgian casting pig has been maintained at Charleroi at about 2*l.* 4s. per ton. No. 1 iron has not declined below 5*l.* per ton, but the difference of 8s. per ton per number has become to some extent nominal, and No. 2 can scarcely be quoted at 5*l.* 8s. per ton, or No. 3 at 5*l.* 16s. per ton. Girders have no well-defined price, but makers would be pretty well satisfied if they could do business at 5*l.* 4s. per ton. No. 2 plates have continued at 6*l.* 16s. per ton, and No. 3 at 7*l.* 12s. per ton. Plates of commerce have made 9*l.* 4s. per ton.

The winter is awaited with some impatience by Belgian coal-owners, who have to face a certain temporary check in the demand, although, thanks to the enquiry for household coal, the general state of affairs is not unsatisfactory. In the Couchant de Mons household coal has been, perhaps, a little less sought after than it usually is at this season of the year. The movement of coal over the Belgian State Railways has still been considerable. In the week last reported on 21,673 trucks carrying coal and coke passed over the system, as compared with 20,255 tons in the corresponding seven days of 1882. The general condition of the German coal trade has continued satisfactory. The demand has increased and deliveries have continued upon an important scale. Coke has, however, been rather pressed for sale in consequence of the excess of the production. The exports of German coal to Holland and Belgium, *via* the ports of the Rhine, have maintained the importance which they have acquired of late. The extraction of coal in the Sarrebruck district was carried on with activity in October, having amounted to 568,000 tons, as compared with 507,000 tons in October, 1882. The deliveries of coal from the Sarrebruck district in October were 590,000 tons, so that the stock was reduced during the month to the extent of 22,000 tons. Coke is quoted in Westphalia at 8s. 4d. to 10s. per ton.

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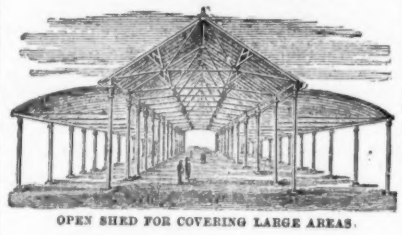
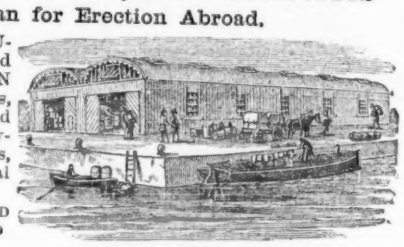
Sold by WM. BRODERSEN, 79, Leadenhall-street, London, E.C.
SOLE AGENT FOR THE UNITED KINGDOM AND THE COLONIES.

FRANCIS & JENKINS,
GREENFIELD WORKS, LLANELLY, SOUTH WALES.
Manufacturers of Steel-pointed Spades and Shovels, Draining and Grafting Tools, &c. Also Manufacturers of
COPPER WORKS LADLES,
To which special attention is given. Rabble Heads, Paddles, and every description of Light Hammered Work.

FRANCIS MORTON AND CO., LIMITED, LIVERPOOL,
MANUFACTURERS OF
GALVANISED CORRUGATED IRON ROOFS, BUILDINGS, AND SHEDDING,
WHICH THEY HAVE EXTENSIVELY ERECTED FOR THE REQUIREMENTS OF
Forges, Rolling Mills, Puddling Sheds, Ironworks, and Collieries
Erected Complete in this Country, or prepared to Plan for Erection Abroad.

OPEN SHED FOR COVERING LARGE AREAS.
GALVANISED OR PAINTED CORRUGATED IRON ROOFING PLATES and TILES. HEAVY CORRUGATED IRON PLATES for fireproof floors, roadways, parapets, &c. (for producing which F. M and Co. have recently laid down powerful Hydraulic Machinery). Wrought-iron Tanks, Guttering, and General Constructional Wrought Ironwork.
DESIGNS PREPARED, AND ILLUSTRATED DESCRIPTIVE CATALOGUES FORWARDED ON APPLICATION

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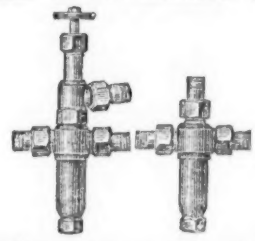
London Office: 1, Delahay Street (first door out of Great George Street), Westminster, S.W

BORLAND'S PATENT INJECTOR.
SEE THE ENGINEERING PAPERS.
The cheapest and most economical.
Can be cleaned in a few minutes.
All parts made to gauge.
Made entirely of best gun metal.
Is the smallest and neatest.

Has no moving parts.
Will not shake off.
Has the most rapid delivery.
No joints to make.
Prompt and continuous action guaranteed.
S. BORLAND, Mansfield Chambers, St. Ann's Square, Manchester,
(Late Manager for Sharp, Stewart, and Company, Limited, Atlas Works, Manchester. Upwards of 22 years with that firm.)
Price Lists, Particulars, References, &c., on Application.

MANCHESTER WIRE WORKS.

NEAR VICTORIA STATION, MANCHESTER.
(ESTABLISHED 1790).
JOHN STANIAR AND CO.,
Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for
LEAD AND COPPER MINES.
Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper.
EXTRA STRONG PERFORATED ZINC AND COPPER RIDDLES AND SIEVES.

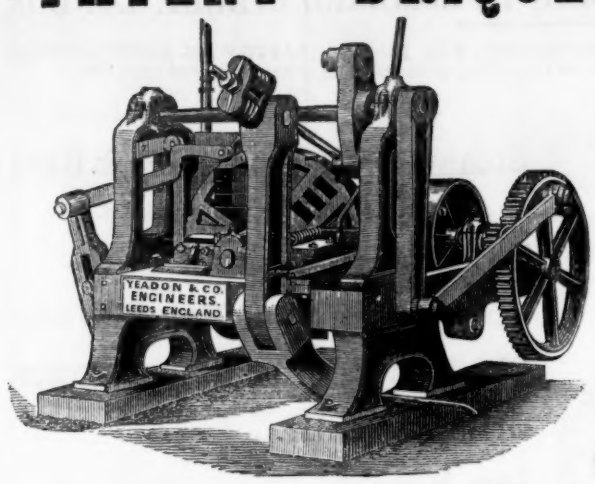
PERFORATED IRON, STEEL, COPPER, AND ZINC PLATES IN VARIOUS DIMENSIONS AND THICKNESSES.
Shipping Orders Executed with the Greatest Dispatch

THE NEW PATENT FLAX BELTING.
The Only Good Belt made of Textile Fabric.—Manufactured solely from the best Russian Flax.
SPECIALITY FOR DYNAMOS, SAW MILLS, AND MAIN DRIVING PURPOSES.
Price List and Particulars from—
B. A. BARCZINSKY, 21, Albany-street, LONDON, N.W.

SILVER MEDAL (HIGHEST AWARD) MELBOURNE, 1881.
TUBES
JOHN SPENCER,
Globe Tube Works, WEDNESBURY,
AND 3, QUEEN STREET PLACE, CANNON STREET, LONDON, E.C.
FIRST PRIZE, SYDNEY, 1880.
TUBES AND FITTINGS for Gas, Steam, and Water; Galvanised, Enamelled, and Hydraulic Tubes; Boiler Tubes and Fittings; Gas Fitters' Tools; Brass Cocks, &c.
ANTI-CORRODO TUBES AND FITTINGS COATED BY BARFF'S RUSTLESS PROCESS.

DYNAMITE, GUN-COTTON, AND PATENT ELECTRIC FUSES,
FOR MINING, TUNNELLING, SUBMARINE, AND ALL KINDS OF BLASTING OPERATIONS.
THE EXPLOSIVES COMPANY (LIMITED)
30 AND 31, ST. SWITHIN'S LANE, LONDON, E.C.

PATENT BRIQUETTE MACHINE.



GREAT SAVING NO WASTE COAL.

NO COLLIERY SHOULD BE WITHOUT.

These Machines utilise small coal or coke by making it into Briquettes or blocks compressed fuel at the rate of 36,000 per day The cost of preparing, mixing, and making is under One Shilling per ton. The Briquettes sell readily for Locomotives, Household, or other purposes. Full particulars on application to

YEADON AND CO.,

LEEDS,

ENGINEERS AND CONTRACTORS

FOR EVERY DESCRIPTION OF PLANT FOR

Collieries, Mines, and Brickworks.

TESTIMONIALS

Messrs. Yeadon and Co , Lee HARBONNAGE DE BERNISSART, PRES PERUWELZ (BELGIUM), JANUARY 4TH, 1878.
I continue to be **perfectly satisfied** with the work performed by the two patent Briquette Machines as well as with that of the Steam Engine, Mixer, &c., which you supplied a few months ago for the manufacture of compressed slack Briquettes, and that I can recommend them as being the **best machines** I know of, after having carefully studied **all the Briquette Machines** constructed at home and abroad.
G. FAGES, General Manager.

SOCIETE DES CHARBONNAGES REUNIS DU RIEU DU CŒUR ET DE LA BOULE. QUAREGNON (BELGIUM), SEPEEMBER 13TH, 1879
Messrs. Yeadon and Co., Leeds.
We are **entirely satisfied** with the erection and working of the two Briquette Machines, as well as the Steam Engine and Mixing Apparatus.
A. FRANEAU, Managing Director.

Messrs. Yeadon and Co., Leeds. CHARBONNAGE DE BERNISSART, PRES PERUWELZ, JANUARY 24TH, 1879
I continue to be highly satisfied with the Briquette Machines which you supplied in 1877. They do their work very well, and produce the Briquettes very regularly, and of a good quality.
G. FAGES, General Manager.

Messrs. Yeadon and Co. SOCIETE HOUILLERE DE VENDIN-LEX-BETHUNE, PAS-DE-CALAIS, DECEMBER 2ND, 1880.
have the honour to inform you that the Briquette Machines **work very well.** The Briquettes are **very well made.** I am highly satisfied with your workmen, who have done their work very well.
SYLVA CATTIER, General Manager.

The undersigned, Civil Engineer of Mines, Chevalier of the Legion of Honor, Consulting Engineer fo the Mines de Vendin-lezto, Bethune, Pas-de-Calais, certifies that the Briquette Machinery for making Briquettes of Coal, supplied by Messrs. Yeadon and Co. to the above Company **is working to their entire satisfaction.**
E. LISBET.
Lille, December 28, 1880

S. MASON & CO.

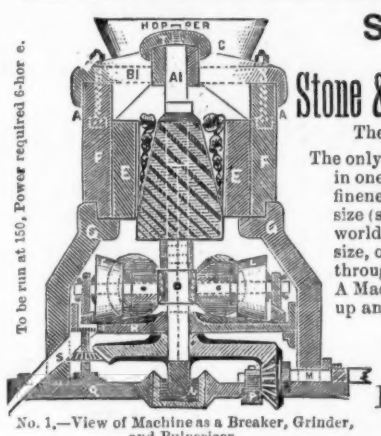
NEW PATENT CIRCULAR

Stone & Ore Breaker, Grinder & Pulverizer

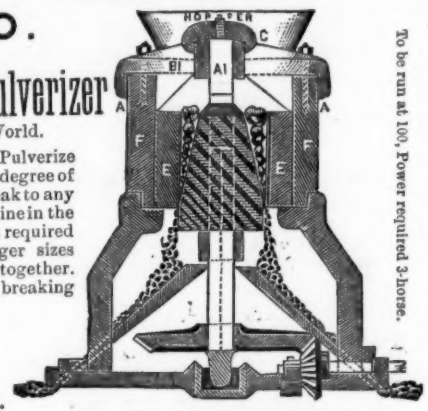
The Simplest and Strongest Machine in the World.

The only Machine made that will Break, Grind, and Pulverize in one operation either wet or dry mineral to any degree of fineness, also by taking away the rollers it will break to any size (see illustration No. 2.) This is the only machine in the world that will reduce all that is put into it to the required size, other machines open and shut, so let larger sizes through than what is wanted, besides mixing them together. A Machine can be seen at the Works in motion, breaking up any required mineral.

S. MASON & CO.,
STONE MACHINE WORKS,
LEICESTER, ENGLAND.



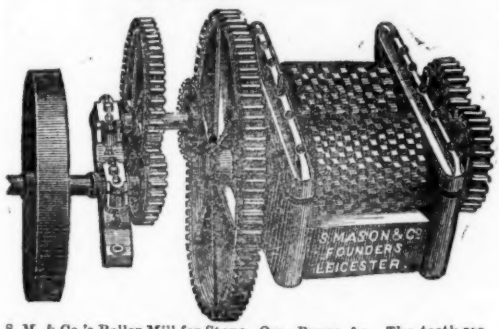
No. 1.—View of Machine as a Breaker, Grinder, and Pulverizer.



No. 2.—View of Machine as a Breaker for different sizes.

READ THIS—

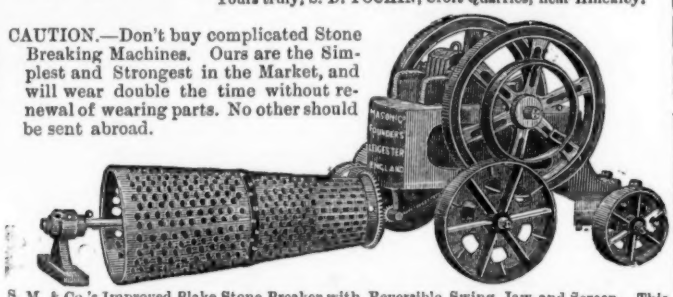
To Messrs. S. Mason and Co., July 19th, 1881.
Dear Sirs,—The six Stone Breaking Machines you have supplied to us are doing their work well and giving every satisfaction. Our stone being so hard, we have broken several Machines that we had bought from other firms, but the Machines purchased from you are strong enough to meet our requirements.
Yours truly, S. D. POCHIN, Croft Quarries, near Hinckley.



S. M. & Co.'s Roller Mill for Stone, Ore, Bones, &c. The teeth are made harder than steel, and slide on a cylinder, so are easy renewed when required, and are made to suit any material.

PRICE LISTS AND REFERENCES FREE O APPLICATION.

CAUTION.—Don't buy complicated Stone Breaking Machines. Ours are the Simplest and Strongest in the Market, and will wear double the time without renewal of wearing parts. No other should be sent abroad.



S. M. & Co.'s Improved Blake Stone Breaker with Reversible Swing Jaw and Screen. This Jaw is reversible in four ways—twice as many as any other. All our Machines are fitted with steel excentric shafts and toggle grooves. We guarantee no infringement of any patent. References to hundreds of users.

IRON ROOF AND BUILDINGS FOR MINING PURPOSES.

ISAAC DIXON, WINDSOR IRONWORKS, LIVERPOOL.

IRON ROOFS

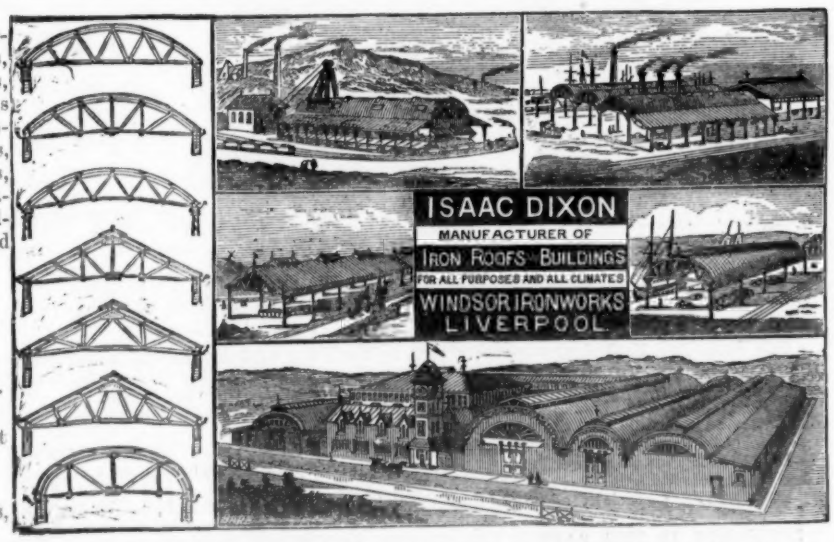
Specially designed for Mining purposes, Iron and Steel Works, Forges, Rolling Mills, Shipbuilding Yards, Engineering Works, Foundries, Gas Works, Collieries, Dock Sheds, Warehouses, Workshops, Railway Stations, Markets, Drill Sheds, Timber Sheds, Tea, Coffee, Sugar, and other Plantations, and all Manufacturing, Railway, Government, Agricultural, and general purposes.

IRON HOUSES AND BUILDINGS

FOR ALL PURPOSES AND ALL CLIMATES.

Special attention given to Export Work.

ILLUSTRATED CATALOGUES, DESIGNS, AND ESTIMATES ON APPLICATION.



*** The attention of those about to erect new works, especially Mining, Manufacturing, and other works abroad, is directed to the great economy which can be effected by adopting Iron Buildings, Sheds, and Roofs for the whole of their requirements. Iron erections can be quickly put up, readily altered in any way, taken down, removed, and re-erected at a small cost, and without injury, cost little for maintenance and repairs, afford protection against fire, and are light and handy for shipping and inland transport.

THE NEW PATENT, DESIGNS, AND TRADE MARKS ACT.—No VII.

SHEFFIELD MARKS.

81.—With respect to the master, wardens, searchers, assistants, and commonalty of the Company of Cutlers in Hallamshire, in the county of York (in this Act called the Cutlers Company), and the marks or devices (in this Act called Sheffield marks) assigned or registered by the master, wardens, searchers, and assistants of that company, the following provisions will have effect:—(1) The Cutlers Company must establish and keep at Sheffield a new register of trade marks (in this Act called the Sheffield register). (2) The Cutlers Company must enter in the Sheffield register, in respect of cutlery, edge tools, or raw steel and the goods mentioned in the next sub-section, all the trade marks entered before the commencement of this Act in respect of cutlery, edge tools, or raw steel and such goods in the register established under the Trade Marks Registration Act, 1875, belonging to persons carrying on business in Hallamshire, or within six miles thereof, and must also enter in such register, in respect of the same goods, all the trade marks which shall have been assigned by the Cutlers Company and actually used before the commencement of this Act, but which have not been entered in the register established under the Trade Marks Registration Act, 1875. (3) An application for registration of a trade mark used on cutlery, edge tools, or on raw steel, or on goods made of steel, or of steel and iron combined, whether with or without a cutting edge, must, if made after the commencement of this Act by a person carrying on business in Hallamshire, or within six miles thereof, be made to the Cutlers Company. (4) Every application so made to the Cutlers Company must be notified to the comptroller in the prescribed manner, and unless the comptroller within the prescribed time gives notice to the Cutlers Company that he objects to the acceptance of the applicalion, it will be proceeded with by the Cutlers Company in the prescribed manner. (5) If the comptroller gives notice of objection as aforesaid the application must not be proceeded with by the Cutlers Company, but any person aggrieved may appeal to the Court. (6) Upon the registration of a trade mark in the Sheffield register the Cutlers Company will give notice thereof to the comptroller, who will thereupon enter the mark in the register of trade marks, and such registration will bear date as of the day of application to the Cutlers Company, and have the same effect as if the application had been made to the comptroller on that day. (7) The provisions of this Act, and of any general rules made under this Act, with respect to application for registration in the register of trade marks, the effect of such registration, and the assignment and transmission of rights in a registered trade mark will apply in the case of applications and registration in the Sheffield register, and notice of every entry made in the Sheffield register must be given to the comptroller by the Cutlers Company, save and except that the provisions of this sub-section will not prejudice or affect any life, estate, and interest of a widow of the holder of any Sheffield mark which may be in force in respect of such mark at the time when it shall be placed upon the Sheffield register. (8) Where the comptroller receives from any person not carrying on business in Hallamshire, or within six miles thereof, an application for registration of a trade mark used on cutlery, edge tools, or on raw steel, or on goods made of steel, or of steel and iron combined, whether with or without a cutting edge, he must in the prescribed manner notify the application and proceedings thereon to the Cutlers Company. (9) At the expiration of five years from the commencement of this Act the Cutlers Company shall close the cutler's register of corporate trade marks, and thereupon all marks entered therein will, unless entered in the Sheffield register, be deemed to have been abandoned. (10) A person may (notwithstanding anything in any Act relating to the Cutlers Company) be registered in the Sheffield register as proprietor of two or more trade marks. (11) A body of persons, corporate or not corporate, may (notwithstanding anything in any Act relating to the Cutlers Company) be registered in the Sheffield register as proprietor of a trade mark or trade marks. (12) Any person aggrieved by a decision of the Cutlers Company in respect of anything done or omitted under this Act may, in the prescribed manner, appeal to the comptroller, who will have power to confirm reverse or modify the decision, but the decision of the comptroller will be subject to a further appeal to the Court. (13) So much of the Cutlers Company's Acts as applies to the summary punishment of persons counterfeiting Sheffield corporate marks—that is to say, the fifth section of the Cutlers Company's Act of 1814, and the provisions in relation to the recovery and application of the penalty imposed by such last-mentioned section contained in the Cutlers Company's Act of 1791, will apply to any mark entered in the Sheffield register.

PART V.—GENERAL.—PATENT OFFICE AND PROCEEDINGS THEREAT.

82.—(1) The Treasury may provide for the purposes of this Act an office with all requisite buildings and conveniences which shall be called, and is in this Act referred to as, the Patent Office. (2) Until a new Patent Office is provided the offices of the Commissioners of Patents for inventions and for the registration of designs and trade marks existing at the commencement of this Act will be the Patent Office within the meaning of this Act. (3) The Patent Office is to be under the immediate control of an officer called the Comptroller-General of patents, designs, and trade marks, who shall act under the superintendence and direction of the Board of Trade. (4) Any act or thing directed to be done by or to the comptroller may, in his absence, be done by or to any officer for the time being in that behalf authorised by the Board of Trade.

83.—(1) The Board of Trade may at any time after the passing of this Act, and from time to time, subject to the approval of the Treasury, appoint the Comptroller-General of patents, designs, and trade marks, and so many examiners and other officers and clerks, with such designations and duties as the Board of Trade think fit, and may from time to time remove any of those officers and clerks. (2) The salaries of those officers and clerks will be appointed by the Board of Trade with the concurrence of the Treasury, and the same and the other expenses of the execution of this Act shall be paid out of money provided by Parliament.

84.—There will be a seal for the Patent Office, and impressions thereof shall be judicially noticed and admitted in evidence.

85.—There will not be entered in any register kept under the Act, or be receivable by the comptroller, any notice of any trust expressed, implied, or constructive.

86.—The comptroller may refuse to grant a patent for an invention, or to register a design or trade mark, of which the use would, in his opinion, be contrary to law or morality.

87.—Where a person becomes entitled by assignment, transmission, or other operation of law to a patent, or to the copyright in a registered design, or to a registered trade mark, the comptroller will on request, and on proof of title to his satisfaction, cause the name of such person to be entered as proprietor of the patent, copyright in the design or trade mark, in the register of patents, designs, or trade marks, as the case may be. The person for the time being entered in the register of patents, designs, or trade marks as proprietor of a patent, copyright in a design or trade mark, as the case may be, will, subject to any rights appearing from such register to be vested in any other person, have power absolutely to assign, grant licenses as to, or otherwise deal with, the same and to give effectual receipts for any consideration for such assignment, license, or dealing. Provided that any equities in respect of such patent, design, or trade mark may be enforced in like manner as in respect of any other personal property.

88.—Every register kept under this Act will at all convenient times be open to the inspection of the public, subject to such regulations as may be prescribed; and certified copies, sealed with the seal of the Patent Office, of any entry in any such register shall be given to any person requiring the same on payment of the prescribed fee.

89.—Printed or written copies or extracts, purporting to be certified by the comptroller and sealed with the seal of the Patent Office, of or from patents, specifications, disclaimers, and other documents in the Patent Office, and of or from registers and other books kept there, will be admitted in evidence in all Courts in Her Majesty's

dominions and in all proceedings without further proof or production of the originals.

90.—(1) The Court may on the application of any person aggrieved by the omission without sufficient cause of the name of any person from any register kept under this Act, or by any entry made without sufficient cause in any such register, make such order for making, expunging, or varying the entry as the Court thinks fit, or the Court may refuse the application; and in either case may make such order with respect to the costs of the proceedings as the Court thinks fit. (2) The Court may in any proceeding under this section decide any question that it may be necessary or expedient to decide for the rectification of a register, and may direct an issue to be tried for the decision of any question of fact, and may award damages to the party aggrieved. (3) Any order of the Court rectifying a register will direct that due notice of the rectification be given to the comptroller.

91.—The comptroller may on request in writing, accompanied by the prescribed fee—(*a*) Correct any clerical error in or in connection with an application for a patent or for registration of a design or trade mark; or (*b*) Correct any clerical error in the name, style, or address of the registered proprietor of a patent, design, or trade mark. (*c*) Cancel the entry or part of the entry of a trade mark on the register: Provided that the applicant accompanies his request by a statutory declaration made by himself, stating his name, address, and calling, and that he is the person whose name appears on the register as the proprietor of the said trade mark.

THE MINERAL WEALTH OF CHILI.

In reviewing the various exports from Autofagasta for the last year, Vice-Consul Barnett remarks that there has been a decrease in export of nitrate of soda of 301,153 quintals, equal to 13,688 tons, to which may be chiefly attributed the falling off in the British ships visiting the port during the year. It is notable, however, that there has been a considerable increase in the employment of other than British bottoms to remove our staple (nitrate), as the falling off of 11,615 tons carried in British shipping in the year 1882, as compared with 1881, is not otherwise accounted for. The export of nitrate to Germany direct has greatly increased during the year 1882, being 208,776 quintals, against 157,661 quintals in 1881. The export to the United States shows a falling off of 59,675 quintals in 1882 as compared with 1881, while to France direct there has been an increase of 26,004 quintals in 1882, and to England direct a small increase of 15,159 quintals.

It is not likely that the export of the year 1883 will show much improvement over that of 1882, as the sources of the extraction of the raw material are gradually becoming more distant from the coast, and this, combined with a generally lower standard of price in the consuming markets, and an increased export duty here, makes the manufacturer's business much less remunerative, and in some cases entirely profitless. In iodine the falling off of export in 1882 has been very heavy (9 1-10th tons as compared with 1881), but promises to slightly increase again. The whole export has gone to England direct.

In silver there has been a fair increase in the export of 1882 over that of 1881, and the indications are that this improved output will continue in the year 1883. The mines generally are better reported upon, and in some the metal has become much more abundant and richer. Labour and means of transit to coast are becoming cheaper, and as this takes place so will work in the mines increase and the extraction of ore augment, though probably the average ley of the ore sent to port may somewhat decrease. The average ley at present of the ore from the mines of this district sent to port is about 76 troy per ton of ore.

The production of copper is increasing rapidly here, and will continue to do so, as the whole neighbourhood and surrounding country is very rich in this metal. Hitherto it may be said that copper has been entirely neglected in the district. Unless found very rich indeed it was impossible to mine it on account of expense in material, of carriage, and of scarcity of labour; but as the desert is being opened up by roads and rail, the means of working and other facilities are drawing the attention of miners to the produce, and various deposits are now being worked which had hitherto been passed over unheeded.

Borate of lime is another product which in the same way as copper has hitherto received no attention, but during the past two or three months work has been done at the large deposits of Ascotan, and already 150 tons of the raw native borax, with a ley of about 25 per cent. boracic acid, has been shipped to Hamburgh on trial with reported fair success.

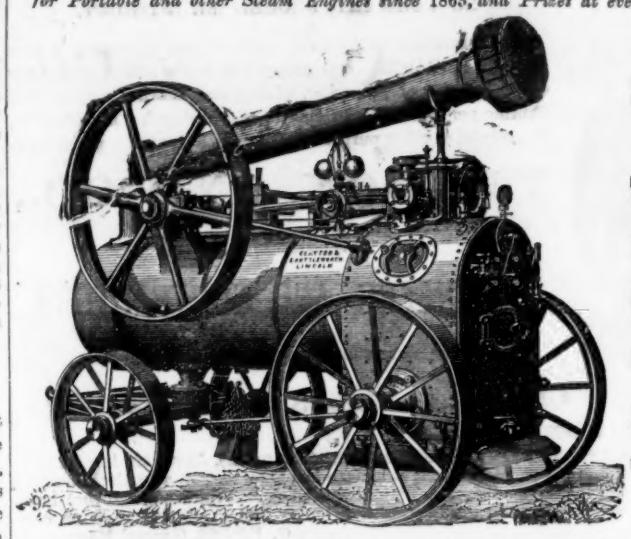
Writing from Coquimbo, Consul Grierson states that in 1882, according to Custom-house returns, the production of copper was about 2455 tons less in 1881 than in the previous year. This arose from various causes, such as the price of copper falling, the scarcity of labour consequent on the drafts made for the war, the previous winter being more rainy and flooding some of the mines, and many of the mines, especially about Tamaya, yielding much poorer ores; however, the year 1882 shows an increase over 1880 of about 2800 tons. The mining districts of Higuera, Tamaya, Brillador, and Panulcillo continue to yield larger quantities of ores, which will cause a greater production of copper during the present year. There are three smelting works in the interior which turn crude ores into copper regulus of about 45 per cent. and five establishments on the coast making copper from the above, as well as crude ores sent down. The largest smelting works are at Guayacan, where the well-known "Urmeneta" brand is produced, of which about 3000 tons are ingots of double refined copper, which commands a high price in the market. Besides the above exportation to foreign countries large quantities of ores and regulus are shipped to Lota and Coronel, coal ports in the south of Chili, producing between 2000 and 3000 tons of fine copper. Lately a good many silver mines have begun to be worked near Coquimbo, and although so far the production has been but little, miners are very sanguine that they will become highly remunerative in time.

History and Properties of Metals.—An interesting lecture on this subject was delivered in the lecture theatre of the Mason College, Birmingham, on Monday, by Prof. Tilden. He commenced by explaining the chemical action involved in the corroding of metals, a subject which, he observed, had many practical bearings. Demonstrating first by means of electricity the chemical composition of water and that of air, by the use of test tubes containing the principal gases, of which air is a mixture, he showed the burning effect upon carbon, sulphur, and steel wire exerted by oxygen contained in both water and air. Glowing carbon, placed in a jar of oxygen, threw off sparks; sulphur consumed with a blue flame; steel wire, the combustion being begun by other means, gave off, under a strong current of oxygen, brilliant scintillations. He pointed out also that air contains in very small quantities water, vapour, carbonic acid gas, and sometimes gaseous impurities. He then showed that when placed in an acid solution and connected by a wire two metals are so acted upon that one of them is always eaten away, and the other remains almost unhurt, electricity being evolved in the process. Two metals placed in water were effected in like manner, and the metal which of any two was the more quickly eaten away stood the higher in a list of the metals compiled with reference to their electro-motive properties. In all corrosion there was this electrical action, and as a metal which stood higher in the electro-motive scale than another lessened, when in contact with the other, any corrosive action upon it, it came about that iron was once put upon ships' keels to protect the copper; and zinc was used in galvanising, for the reason that, in addition to covering the iron, it decayed, corrosion being once established, before the other metal did. The lecturer showed, by means of experiments, the effects of great heat in causing oxidation, and indicated briefly how the knowledge he had imparted might be applied. The experiments were in all cases well conducted, and effectively illustrated a very lucid lecture.

CLAYTON AND SHUTTLEWORTH,

STAMP END WORKS, LINCOLN, AND 78, LOMBARD STREET, LONDON.

☞ *The Royal Agricultural Society of England have awarded Every First Prize to CLAYTON and SHUTTLEWORTH for Portable and other Steam Engines since* 1863, *and Prizes at every Meeting at which they have competed since* 1849.



Steam Engines, portable & fixed

(For Coals, Wood, Straw, and every kind of Fuel)

Thrashing Machines.

Straw, Corn, and Hay Elevators.

Chaff Cutters for Steam Power.

Grinding Mills.

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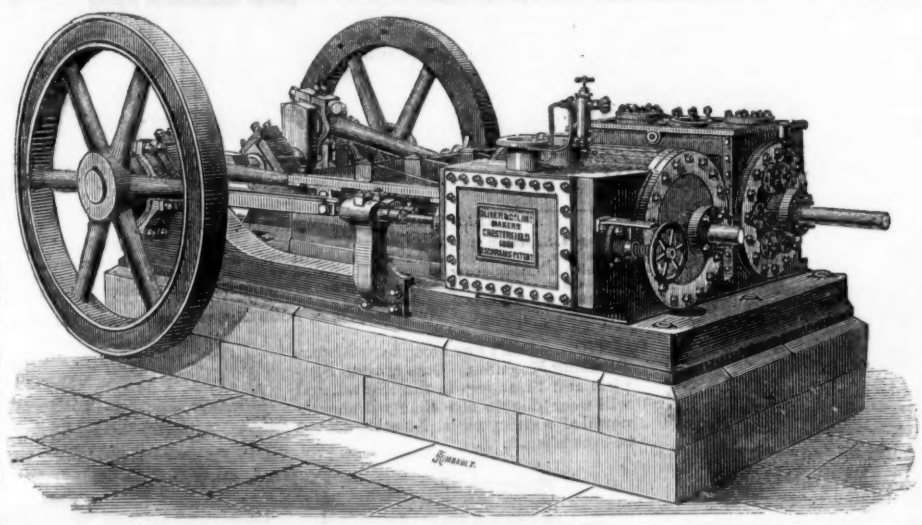

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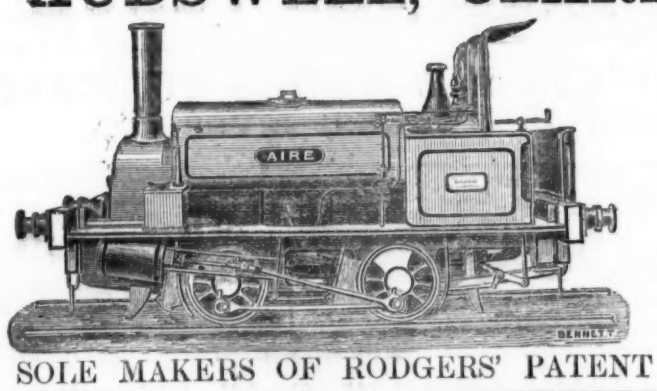

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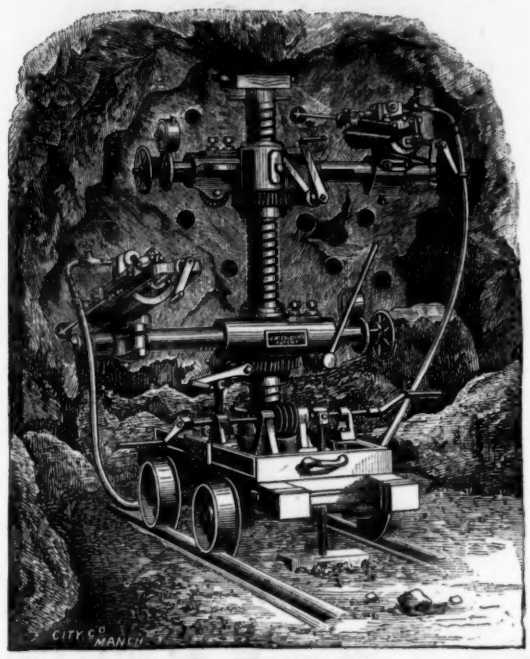

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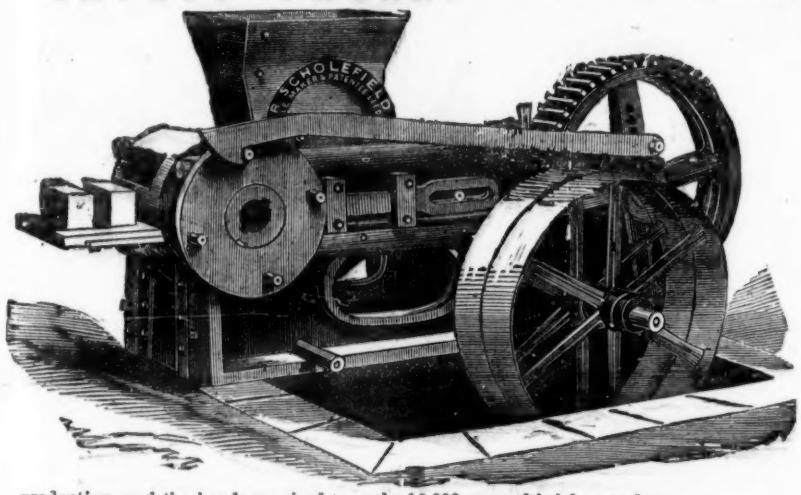

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1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	0	2	0
1 boy greasing, 1s. 6d. per day	0	1	6
1 engine-man, 5s. per day	0	5	0
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Total cost of making 10,000 pressed bricks	£1	5	0, or 2s. 6d. per 1000.

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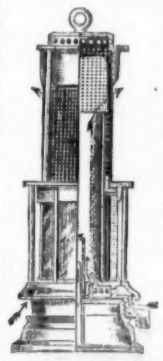

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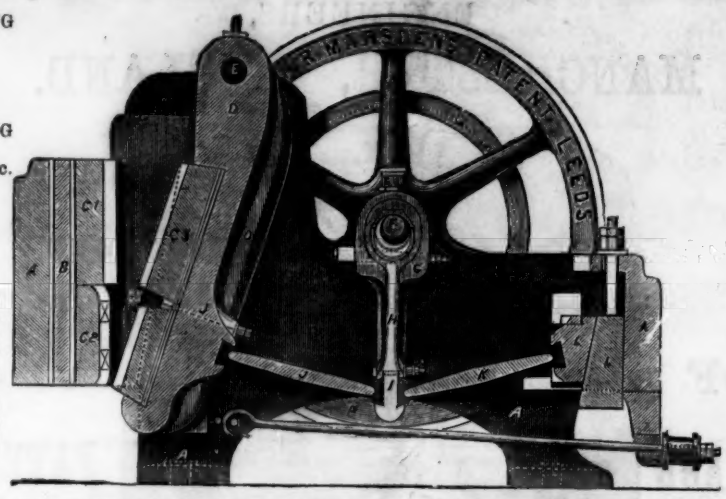

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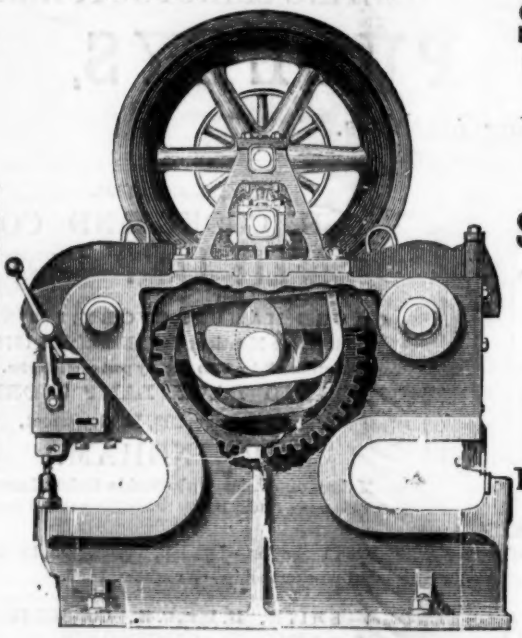

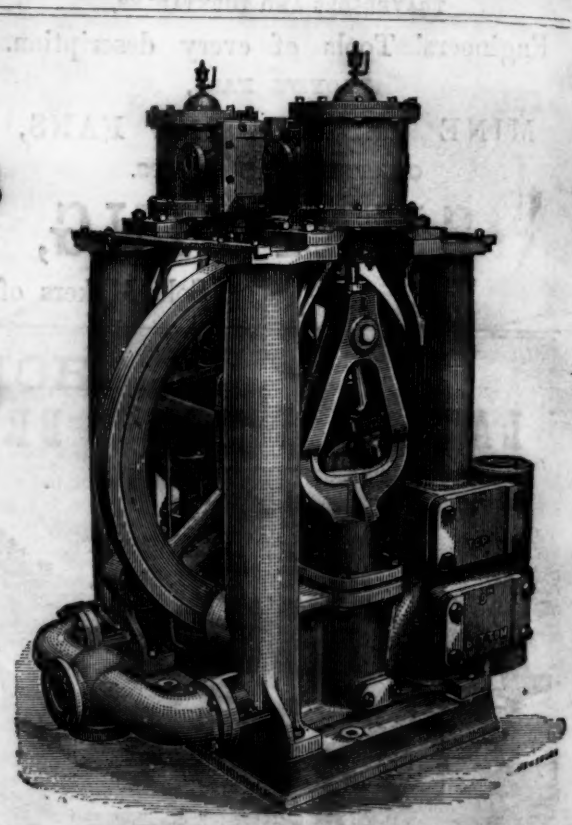

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